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CHASIS CX-T21SN

Service Manual

○ MODELOS: DTH-21S8RAV, DTH-21S7,

○ **TABLE**

1. Precautions
2. Specification
3. Alignment and Adjustment
4. Remote Control
5. Using Device and Description
6. Trouble Shooting Flow Chart
7. Block Diagram
8. PCB Layout
9. Schematic Diagram

1. Precautions

Follow these safety, servicing and ESD precautions to prevent damage and protect against potential hazards, such as electrical shock and X-rays.

1-1 Safety Precautions

1. Be sure that all of the built-in protective devices are replaced.
   Restore any missing protective shields.

2. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including : nonmetallic control knobs and compartment covers.

3. Make sure that there no cabinet openings through which people-particularly childrenmight insert fingers and contact dangerous voltages. Such opening include the spacing between the picture tube and the cabinet mask, excessively wide cabinet ventilation slots, and improperly fitted back covers.
   If the measured resistance is less than 1.0 megohm or greater than 5.2 megohms, an abnormality exists that must be corrected before the unit is returned to the customer.

4. Leakage Current Hot Check (Figure 1-1) :
   Warning : Do not use an isolation transformer during this test. Use a leakage current tester or a metering system that complies with International Electrotechnical Commission 65.(IEC 65)

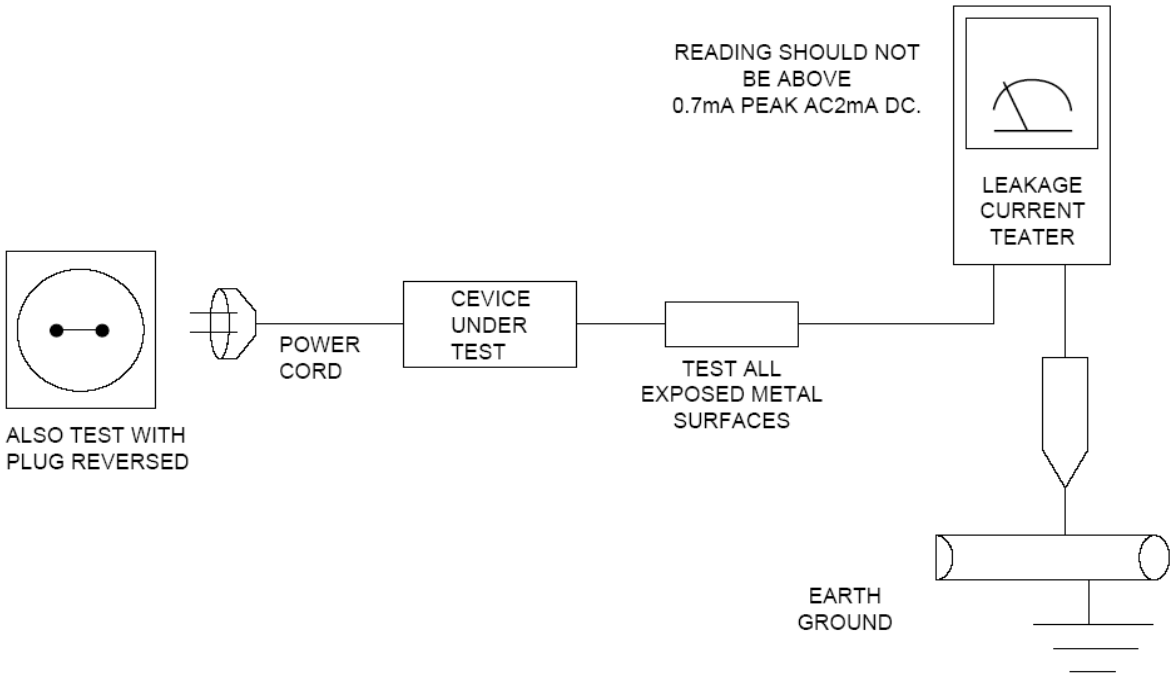


FIGURE 1-1
AC LEAKAGE TEST

5. With the unit completely reassembled, plug the AC line cord directly the power outlet.
With the unit' s AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc) and all exposed metal parts, including: antennas, handle brackets, metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.

6. Antenna Cold Check:
With the unit's AC plug disconnected from the AC source, connect an electrical jumper across the two AC prongs. Connect one lead of the ohmmeter to an AC prong. Connect the other lead to the coaxial connector.

7. X-ray Limits:
The picture tube is especially designed to prohibit X-ray emissions.
To ensure continued X-ray protection, replace the picture tube only with one that is the same type as the original. Carefully reinstall the picture tube shields and mounting hardware: these also provide X-ray protection.

8. High Voltage Limits:
High voltage must be measured each time servicing is done on the +B, horizontal deflection or high voltage circuits.

9. High voltage is maintained within specified limits by close-tolerance, safety-related components and adjustments. If the high voltage exceeds the specified limits, check each of the special components.

10. Design Alteration Warning:
Never alter or add to the mechanical or electrical design of this unit.
Example: Do not add auxiliary audio or video connectors. Such alterations might create a safety hazard. Also, any design changes or additions will void the manufacturer' s warranty.

11. Components, parts and wiring that appear to have overheated or that are otherwise damaged should be replaced with parts that meet the original spec ifications. Always determine the cause of damage or overheating, and correct any potential hazards.

12. Observe the original lead dress, especially near the following areas:
Antenna wiring, sharp edges, and especially the AC and high voltage power supplies. Always inspect for pinched, out-of place, or frayed wiring.
Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that leads and components do not touch thermally hot parts.

13. Picture Tube Implosion Warning:
The picture tube in this receiver employs "integral implosion" protection.
To ensure continued implosion protection, make sure that the replacement picture tube is the same as the original.

14. Do not remove, install or handle the picture tube without first putting on shatterproof goggles equipped with side shields.
Never handle the picture tube by its neck. Some "in-line" picture tubes are equipped with permanetly attached diflection yoke: do not try to remove such "permanently attached" yokes from the picture tube.

15. Product Safety Notice:
    Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection.
    These safety features and the protection they give might be lost if the replacement component differs from the original--even if the replacement is rated for higher voltage, wattage, etc.
    Components that are critical for safety are indicated in the circuit diagram by shading(⚠)
    Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

1-2 Servicing Precautions

Warning 1: First read the "Safety Precaution" section of the manual.
If some unforeseen circumstance creates a conflict between the servicing and safety precautions, always follow the safety precaution.
Warning 2: An electrolytic capacitor installed with the wrong polarity might explode.

1. Servicing Precautions are printed on the cabinet. Follow them.

2. Always unplug the unit' s AC power cord from the AC power source before attempting to: (a) Remove or reinstall any component or assembly, (b) Disconnect an electrical plug or connector, (c) Connect a test component in parallel with an electrolytic capacitor.

3. Some components are raised above the printed circuit board for safety.
   An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components.
   Reinstall all such elements to their original position.

4. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.

5. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels,. input terminals).

6. Insulation Checking Procedure: Disconnent the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500V) to the blades of the AC plug.
   The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.

7. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.

8. Always connect a test instrument' s ground lead to the instrument chassis ground before connecting the positive lead: always remove the instrument' s ground lead list.

1-3 Precautions for Electrostatically Sensitive Devices (ESDs)

1. Some semiconductor ("solid state") devices are easily damaged by static electricity. Such some components are called Electrostatically Sensitive devices (ESDs); examples include integrated circuits and some field-effect tran sistors. The following techniques will reduce the occurrence of component damage caused by static electricity.

2. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by, touching a known earth ground. Alternatively, wear the discharging wrist-strap device. (Be sure to remove it prior to applying power-this is an electric shock precaution.

3. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of electrostatic charge.

4. Do not use freon-propelled chemicals. These can generate electrical charges that damage ESDS.

5. Use only a grounded-tip soldering iron when soldering or unsoldering ESDS.

6. Use only an anti-static solder removal device. Many solder removal devices are not rated as "anti-static"; these can accumulate sufficient electrical charge to damage ESDS.

7. Do not remove a replacement ESD front its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.

8. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

9. Minimize body motions when unpackaged replacement ESDS. Motion, such as brushing clothes together, or lifting a foot from a carpeted floor can generate, enough static electricity to damage an ESD.

2. Specifications

RECEPTION SYSTEM	NTSC M, PAL M/N
POWER REQUIREMENTS	AC90 ~ 260V 50/60Hz(Auto)
STEREO	SIMPLE A/V STEREO
SOUND OUTPUT POWER	5W(R) + 5W(L)
ANTENNA IMPEDANCE	75 OHM UNBALANCED TYPE
OPERATING FREQUENCIES	VIDEO IF_ 45.75MHz SOUND IF_ 41.25MHz
CHANNEL COVERAGE	VHF CH: 2 ~ 13 UHF CH: 14 ~ 69 CABLE CH: 1, 14 ~ 125
CHANNEL INDICATION	ON-SCREEN DISPLAY
REMOTE CONTROL UNIT	REQUIRES TWO 1.5V BATTERIES TYPE AA SIZE
PROGRAM CH MEMORY	181 CH MEMORY

3. Alignment and Adjustment

1-1 Factory Mode

1. Do not attempt these adjustments in the Video Mode.
2. The Factory Mode adjustments are necessary when either the EEPROM (IC901) or the CRT is replaced.

1-2 When EEPROM (IC901) Is Replaced

1. When IC901 is replaced all adjustment data revert to initial values.
   It is necessary to re-program this data.
2. After IC901 is replaced, warm up the TV for 10 seconds.

1-3 When CRT Is Replaced

1. Make the following adjustments after setting up purity and convergence:
   White Balance: R.BIA, G.BIA, B.BIA, R.DRV, G.DRV, B.DRV
   Sub-Brightness: SUB BRT
   S correction: V.SC
   Vertical Center: V.POSI
   Vertical Size: V.SIZE
   Vertical linearity: V.SLOPE
   Horizontal Shift: H.PHASE

2. Factory(SERVICE) Mode

2-1 Procedure for the Factory adjustment mode

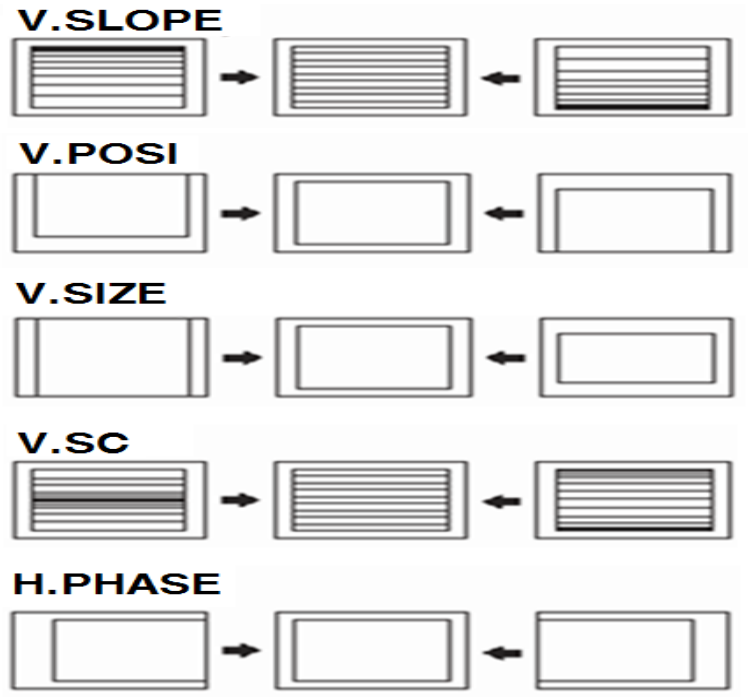
1. This mode uses the special remote control. The Service Mode is activated by entering "Service" key.
   If you don't have a "Service" key then turn on the TV at first and press follow keys within 2 seconds in regular sequence.
   ⊙ Push 【MENU】 Key → Push digit key 【6483】Pulsar la tecla MENÚ Pulsar la tecla dígito 6483
   ⊙ If you bus stop press 【-/--】 key will be enter
2. Enter the adjustment menu
   ⊙ Push 【MUTE】 Key → Enter "M0" → Then press 【MUTE】 key will enter "M1" and "M2"
   ⊙ In "M2" select "Setup select" to "1" → Then press 【MUTE】 key will enter "M3" to "M9"
3. The SERVICE menu will be displayed. The Service Mode has nine components: MENU 0 ~ MENU 9
3. Access Service mode by pressing "MUTE" keys. The adjustment parameters are displayed in sequence, and selected by pressing the Channel keys(▲▼).
4. The VOLUME keys (◀▶) increase or decrease the adjustment values
6. Cancel the Service mode by re-pressing the "Service" keys, and returns to Factory Menu.
   If you don't have a "Service" key you have to Picture Power off the TV to exit from service mode.

2-2 Factory Adjustment Parameter mode

▣ MENU 0

M0	Default Data		Recommend Data		DESCRIPTION
	50Hz	60Hz	50Hz	60Hz	
V.SLOPE	32	+00	31	-01	Picture vertical center (VARIABLE 0~63)
V.POSI	32	+00	36	+03	The vertical positions (VARIABLE 0~63)
V.SIZE	32	+00	43	+03	The vertical amplitude (VARIABLE 0~63)
V.SC	32	+00	40	+04	The Vertical S-correction (VARIABLE 0~63)
H.PHASE	32	+00	40	+01	The horizontal position (VARIABLE 0~63)
H.BLK.SW	ON		ON		Switch of horizontal wide blanking
H.BLK.L	0		3		Time of horizontal wide blanking start of blanking (VARIABLE 0~15)
H.BLK.R	0		8		Time of horizontal wide blanking end of blanking (VARIABLE 0~15)

⊙ Receive standard Crosshatch pattern signal for PAL system.
⊙ Adjust V.SLOPE value to the horizontal line just appear from half bottom shadow.
⊙ Adjust V.POSI value to the center horizontal line correspond to CRT vertical center.
⊙ Adjust V.SIZE value to get 90% of vertical picture contents would be displayed on CRT.
⊙ Adjust VSC value to vertical S-correction is ok.
⊙ Adjust H.PHASE value to get the picture horizontal center correspond to CRT horizontal center.



▣ MENU 1

M1	Default Data	Recommend Data	DESCRIPTION
CL	6	6	Cathode drive level(VARIABLE 0~15)
BLOC	8	6	Black level offset course(VARIABLE 0~15)
R . BIA	32	7	R bais adjusted (VARIABLE 0~63)
G . BIA	32	4	G bais adjusted (VARIABLE 0~63)
B . BIA	32	9	B bais adjusted (VARIABLE 0~63)
R . DRV	32	32	R drive adjusted (VARIABLE 0~63)
G . DRV	32	32	G drive adjusted (VARIABLE 0~63)
B . DRV	32	39	B drive adjusted (VARIABLE 0~63)
SUB BRT	32	39	Sub Brightness (VARIABLE 0~63)
VSD			Vertical scan disable

⊙ Select the signal in "TEST.S" menu.
⊙ Select "VSD" AND PRESS"V+" key, Will be enter SC line mode.
⊙ Press no "2" is reduce "R . BIA" and no "3" is increase "R . BIA"
⊙ Press no "4" is reduce "G . BIA" and no "5" is increase "G . BIA"
⊙ Press no "6" is reduce "B . BIA" and no "7" is increase "B . BIA"
⊙ When the white balance is OK , Adjust G2 voltage to the screen just display the line.
⊙ Press V+ key will be exit the SC line mode.

▣ MENU 2

M2	Default Data		Recommend Data		DESCRIPTION
RF.AGC	32		20		RF AGC (VARIABLE 0~63)
OSD.V.POS	16	16	50	33	Vertical position of OSD (0~63)
OSD.H.POS	16		5		Horizital position of OSD (0~15)
OSD BRT	8		15		Adjust brightness of OSD
SHIPPING					Shipping mode
SETUP SELECT	0		1		The item setup to "1" and press mute key will be enter next menu

⊙ Receive 60dBu (1mv)V_H color bar signal , adjust AGC value (voltage from high to low) to picture noise reduce gradually to be just disappeared. Select "shipping", push [V+] [V-] key to be shipped.

▣ MENU 3

M3	Default Data	Recommend Data	DESCRIPTION
SUB CONT	63	63	Sub contrast
SUB COLOR	63	63	Sub color
SUB SHARP	63	63	Sub sharpness
SUB TINT	31	35	Sub tint
COF	0	1	Cut-off control range."0"=±270mV, "1"=±450mV
FMR	OFF	ON	FM Radio select
V CHIP	ON	ON	V CHIP select
FRENCH	ON	ON	OSD language select
PORTUGUESE	ON	ON	OSD language select

▣ MENU 4

M4	Default Data	Recommend Data	DESCRIPTION
CBS	1	0	Control sequence of beam current limiting. 0 is normal operation, 1 is control on contrast and brightness in parallel
RPA	2	2	Ratio pre-and aftershoot , "0"=1 : 1 , "1"=1.5 : 1, "2"=2:1
RPO	2	2	Ratio of positive and negative peaks, "0"=1:1 , "1"=1: 1.3 , "2"=1: 1.7 , "3"=1: 0.7
TCI2X	0	0	Top sync clamp current of the CVBS/Y input clamp, "0"=80uA, "1"=160uA
BKS	ON	ON	Black stretch
BSD	0	0	Black stretch depth "0"=15IRE , "1"=30IRE
AAS	0	0	Black area to switch of the black stretch, "0"=12% , "1"=20% , "2"=6% , "3"=8%
PWL	OFF	ON	Peak white limiting
SOC	1	1	Soft clipping level , "0"=0 , "1"=5% , "2"=10% , "3"=OFF
PWL DAC	2	10	Peak White limiting , "0"= 0.4VBL-WH "15"= 0.6VBL-WH
CHSE	3	3	PAL/NTSC ident sensitivity. "0"=-34dB , "1"=-37dB "2"=-41dB "3"=-46B

▣ MENU 5

M5	Default Data	Recommend Data	DESCRIPTION
OIF	8	15	Offset IF demodulator , "0" is negative correction, "8" is no correction , "15"is positive correction
FFI	0	0	Fast filter IF-PLL.0 is normal time constant,1 is increased time constant
AGCS	2	2	AGC speed , "0"=NormalX0.7 , "1"=Normal "2"=NormalX3 , "3"=NormalX6
DCXO	3	3	Adjust the C0 of X'tal
FSL	0	0	Forced slicing level for vertical sync.0 is slicing level dependent on noise detector,1 is fixed slicing level of 60%
SSL	0	0	Slicing level for horizontal sync separator. 0 is50%, 1 is 30% direction top sync
GD	0	0	Group delay on TV signal.0 is no group delay correction,1 is group delay correction switched on
AKB	OFF	ON	Black current stabilization
ON V.A	0	15	Vertical size while power on when AKB=ON
DFL	0	0	Disable flash protection from deflection timer. 0 is restart horizontal output, after flash protection , via slow start;1 is restart horizontal output, after flash protection, with typical duty-cycle.
XDT	0	0	X-ray detection
FBC	0	0	Fixed beam current switch-off. 0 is switch-of with blanked RGB output; 1 is switch-off with fixed beam current
MUTE MODE	0	0	MUTE mode 0: mute active while change channel. 1: mute off while change channel.

▣ MENU 6

M6 ▼	Default Data	Recommend Data	DESCRIPTION
CLF	0	0	Selection internal clamp speed. 0 is clamp slow;1 is clamp 6 times faster
BPB	0	0	Enable bypass of sound band pass filter at mono mode. 0 is sound band pass active for mono demodulator; 1 is sound band Pass filter bypassed
BPB2	0	1	Bypass sound band pass filter section 2 .0 is band pass filter active; 1 is band pass filter bypassed
FMWS	0	2	Window select for FM demodulator
AGN	0	1	Gain FM demodulator
AGNE	0	1	Extended gain setting for FM demodulator, "1"=+3.8dB "2"=-6dB "3"=-3dB
AVL	OFF	ON	AVL select
DSGLS	0	1	Gain from audio inputs to audio output, "0"=0 dB, "1"=+6 dB
V . P1	10	20	Adjustment P1 of sound curve
V . P25	25	50	Adjustment P25 of sound curve
V . P50	50	70	Adjustment P50 of sound curve
V . P75	75	85	Adjustment P75 of sound curve
V . MAX	63	55	Maximum volume setup
V. MAX AV	63	55	Maximum AV volume setup
ON DL	3	12	Delay time when power on
OFF DL	0	0	Off mode when power off

▣ MENU 7

M7	Default Data	Recommend Data	DESCRIPTION
MAT	N-JPN/PAL	N-USA	PAL-SECAM/NTSC matrix
ACL	0	0	Automatic color limiting.0 is not active;1 is active
CB	0	0	Chroma band pass center frequency.0 is Fsc;1 is 1.1X Fsc
BPS	0	0	Bypass of chroma base-band delay line
FCO	0	0	Forced color-On
Y . P	8	8	Y delay of PAL signal
Y . N	8	8	Y delay of NTSC signal
Y . AV	8	8	Y delay of AV signal
Y . SVHS	8	8	Y delay of SVHS signal
PF. P	0	1	Peaking center Freq. for PAL signal. "0"=2.7MHZ, "1"=3.1MHZ, "2"=3.5MHZ, "3"=4MHZ,
PF. N	0	1	Peaking center Freq. for NTSC signal. "0"=2.7MHZ, "1"=3.1MHZ, "2"=3.5MHZ, "3"=4MHZ,

PF. AV	0	1	Peaking center Freq. for AV signal. "0"=2.7MHZ, "1"=3.1MHZ, "2"=3.5MHZ, "3"=4MHZ,
PAL MN	OFF	ON	ON; Auto/NTSC/PAN L/PAL M, Off; Not select of color system
CATV	0	1	0; AIR/CATV, 1; AIR/CATV(STD)/CATV(HRC)/CATV(IRC)
RGB HSH	6	6	Horizontal of YUV or RGB signal

▣ MENU 8

M8 ▼	Default Data	Recommend Data	DESCRIPTION
S. BRT	75	75	Brightness adjustment in stand mode.
S. CONT	75	75	Contrast adjustment in stand mode.
S. COLOR	50	50	Color adjustment in stand mode.
S. SHARP	50	50	Sharpness adjustment in stand mode.
D. BRT	75	75	Brightness adjustment in dynamic mode.
D. CONT	100	100	Contrast adjustment in dynamic mode.
D. COLOR	60	60	Color adjustment in dynamic mode.
D. SHARP	50	50	Sharpness adjustment in dynamic mode.
M. BRT	50	50	Brightness adjustment in personal mode.
M. CONT	50	50	Contrast adjustment in personal mode.
M. COLOR	50	50	Color adjustment in personal mode.
M. SHARP	50	50	Shrarpness adjustment in personal mode.
W. BRT	75	75	Brightness adjustment in B/W mode.
W. CONT	75	75	Contrast adjust in B/W mode.
W. COLOR	0	0	Color adjust in B/W mode.
SC BRT	50	50	Brightness adjust in SC line mode.

▣ **MENU 9**

M9 ▼	Default Data	Recommend Data	DESCRIPTION
AV2	OFF	OFF	AV2 signal selection
SVHS	OFF	OFF	SVHS signal selection
DVD	OFF	ON	YUV signal selection
PWR REST	0	1	AC on state , "0"is last memory and always in TV mode ; "1" is last memory ; "2"always in TV mode , "3" always in standby mode
BALANCE	OFF	ON	Balance control selection
HALFTONE	ON	ON	OSD halftone selection
MENU BG	OFF	OFF	Back mode selection
IR OPT	SANYO	SANYO	Remote code selection, SANYO or NEC is option.
KEY OPT	SANYO	SANYO	Key PCB selection , "SANYO"is use SANYO keyboard , "MEK" is use PHILIPS keyboard
LOGO	OFF	OFF	LOGO selection
B . BACK	ON	ON	Blue screen selection
GAME	OFF	ON	GAME selection; 0: Off, 1: On
UHF BAND	0	1	1 is using tuner without band sw.0 is using the tuner with band sw.
VH	136.75MHz	136.75MHz	
UHF	403.25MHz	403.25MHz	
V.mute p. off	ON	ON	Video mute when power off
COMBO	OFF	OFF	OFF/DVD/USB
DVDTV	0	1	
DISP YUV	1	0	

⊙ **[**HALFTONE**]** and **[**MENU BG**]** all is On , the OSD will be is halftone.

⊙ **[**HALFTONE**]** is On and **[**MENU BG**]** is OFF , the OSD is will be is transparent.

⊙ **[**HALFTONE**]** is OFF", **[**MENU BG**]** is ON , the OSD without halftone.

2-3 Logo edit

In factory mode and press [CALL] key, Will be enter logo edit;

⊙ Press [**1**]/[**2**] key: Adjust the vertical position of logo.

⊙ Press [**3**]/[**4**] key: Adjust the horizontal position of logo.

⊙ Press [**5**]/[**6**] key: Adjust the color of logo.

⊙ Press [**7**]/[**8**] key: Adjust the size of logo.

⊙ Press [🡅]/[🡇] key: Adjust the value of logo (0~9 ; A~Z ; a~z; ":.+-*/@",SPACE)

⊙ Press [🡄]/[🡆] key: Adjust cursor.

⊙ Press [**CALL**] key: Exit logo edit mode.

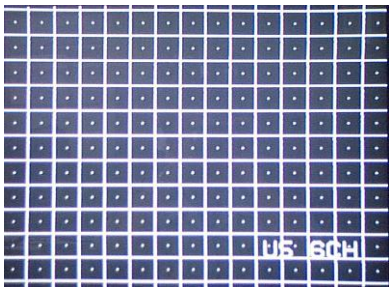
3. Other Adjustments Mode

3-1 Adjusting the Screen Voltage

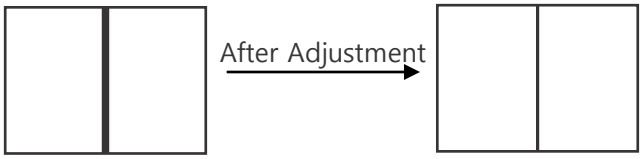
1. Access Service mode by pressing “M1” keys in Adjust menu.
2. Select “VSD” by pressing the CHANNEL keys (▲▼), and “VSD” to by pressing Volume ▶.
3.. Adjust the Screen VR (on the FBT) so that horizontal line is just seen a little.

3-2 Adjusting the FOCUS

1. Display the CROSS Hatch pattern.



2. Set the Screen Adjustment to "View as Standard".
3. Adjust the FOCUS control for well-defined scanning lines in the center area of the screen
4. Slowly turn the Static Focus VR counter clockwise so that the center vertical line is the most clearly displayed.



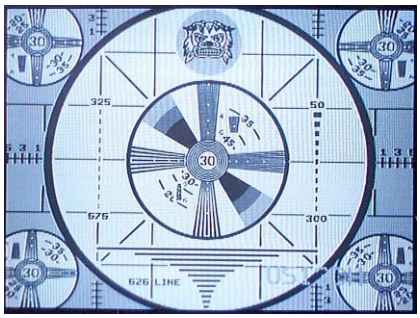
3-3 High Voltage Check

CAUTION: There is no high voltage adjustment on this chassis.
The B+ power supply must be set to +118 volts (Full color bar input and normal picture level).

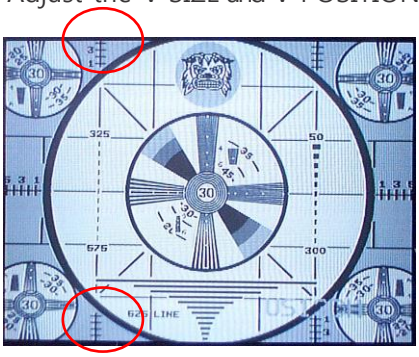
1. Connect a digital voltmeter to the second anode of the picture tube.
2. Turn on the TV. Set the Brightness and Contrast controls to minimum (zero beam current).
3. The high voltage should not exceed 21UX:23KV/21RF:30KV
4. Adjust the Brightness and contrast controls to both extremes. Ensure that the high voltage does not exceed 21UX:23KV&21RF:30KV under any conditions.

3-4 Adjusting the Picture Size

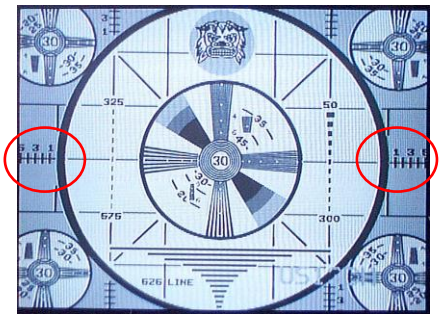
1. Display the Lion pattern



2. Adjust the V-SIZE and V-POSITION items so that the height becomes 4.

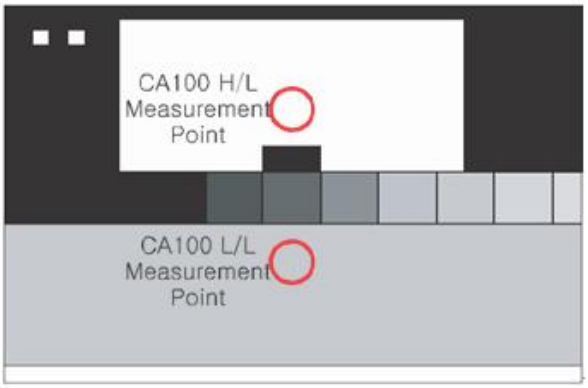


3. Adjust the H-PHASE items so that the width becomes 5



3-5 Adjusting the White Balance

1. Set up
   (1) Warm up the TV for at least 20 minutes in the HEAT RUN Mode (OSD White).
   This mode is displayed by entering the following sequence: MENU 1
   (2) Input a Toshiba pattern.
2. Display the Toshiba pattern and adjust the White Balance using CA100 with the coordinates of the corresponding model.



[CA100]

3. Low-Light Adjustment
   ■ Set **SBRT** to 1.5 ± 0.3 fL in the Service Mode with using CA100.
   - Adjust Sub Bright to set Y.
   - Adjust BDC Cutoff to set y.
   - Adjust RDC Cutoff to set x.
4. High-Light Adjustment
   ■ Set **SCON** to 40 ± 5 FL (21" Ultra Slim) in the Service Mode with using CA100.
   - Adjust Sub Contrast to set Y.
   - Adjust B Drive to set y.
   - Adjust G Drive to set x.
5. Check Low/Light and readjust it if its value has been changed.

※ White Balance Standard Data

No	Item	Data	Required Adjustment
1	White Balance	x:282± 3 / y:302± 3 / 40± 3 x:282± 5 / y:302± 5 / 1.5± 0.2	White Balance (Europe)

☞ When the White Balance adjustment is finished, check the Screen Voltage

■ Readjust a screen Voltage at your discretion after check the light of screen on Video mode no signal

3-6 Adjusting the Purity

1. Warm up the receiver for at least 20 minutes.

2. Plug in the CRT deflection yoke and tighten the clamp screw.

3. Plug the convergence yoke into the CRT and set.

4. Input a black and white signal.

5. Fully demagnetize the receiver by applying an external degaussing coil.

6. Turn the CONTRAST and BRIGHTNESS controls to maximum.

7. Loosen the clamp screw holding the yoke.

   Slide the yoke backward or forward to provide vertical green belt.

8. Tighten the convergence yoke.

9. Slowly move the deflection yoke forward, and adjust for the best overall green screen.

10. Temporarily tighten the deflection yoke.

11. Produce blue and red rasters by adjusting the low-light controls. Check for good purity in each field.

12. Tighten the deflection yoke.

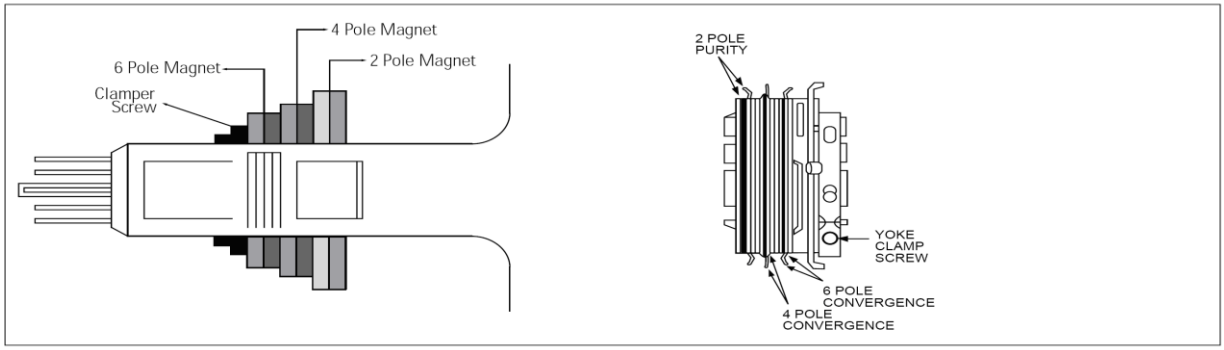


Fig. 4-2 Convergence Magnet Assembly

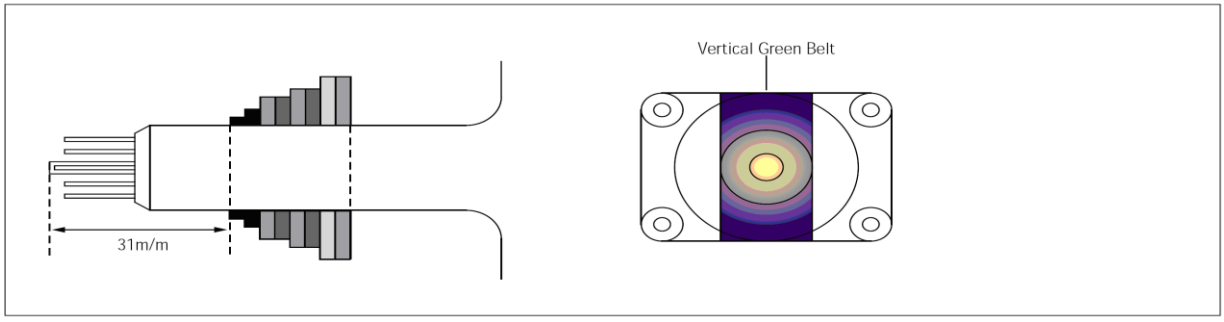
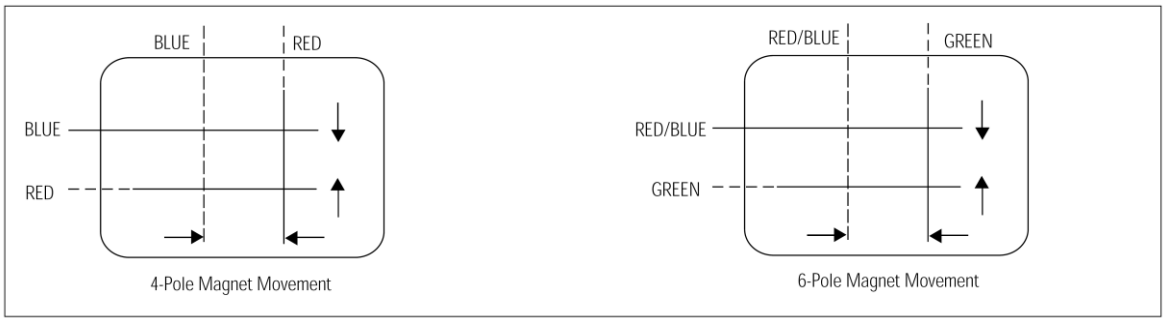


Fig. 4-3 Vertical Green Belt

3-7 Adjusting the Center Convergence

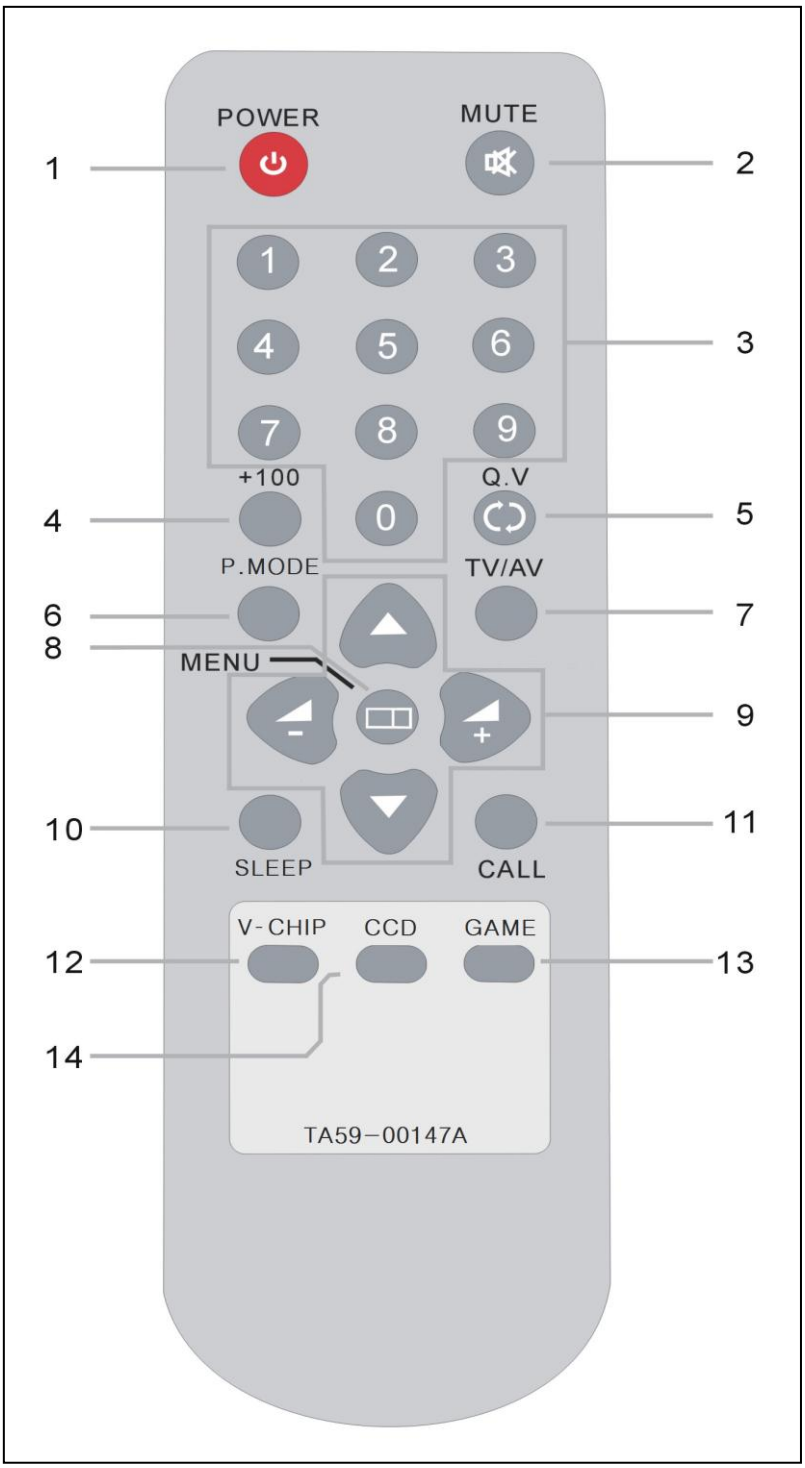
1. Warm up the receiver for at least 20 minutes.
2. Adjust the two tabs of the 4 pole magnets to change the angle between them.
   Superimpose the red and blue vertical lines in the center area of the screen.
3. Adjust the Brightness and Contrast controls for a well-defined picture.
4. Adjust the two-tab pairs of the 4 pole magnets, and change the angle between them.
   Superimpose the red and the blue vertical lines in the center area of the screen.
5. Turn the both tabs at the same time, keeping the angle constant, and superimpose the red and blue horizontal line in the center of the screen.
6. Adjust the two-tab pairs of the 6-pole magnets to superimpose the red and blue line onto the green. (Changing the angle affects the vertical lines, and rotating both magnets affects the horizontal lines.)
7. Repeat adjustments 2~6, if necessary.
8. Since the 4-pole magnets and 6-pole magnets interact, the dot movement is complex .



3-8 Adjusting the RF AGC

■ Set the AGC data to 15~25 (Adjust Mode).

4. REMOTE CONTROL

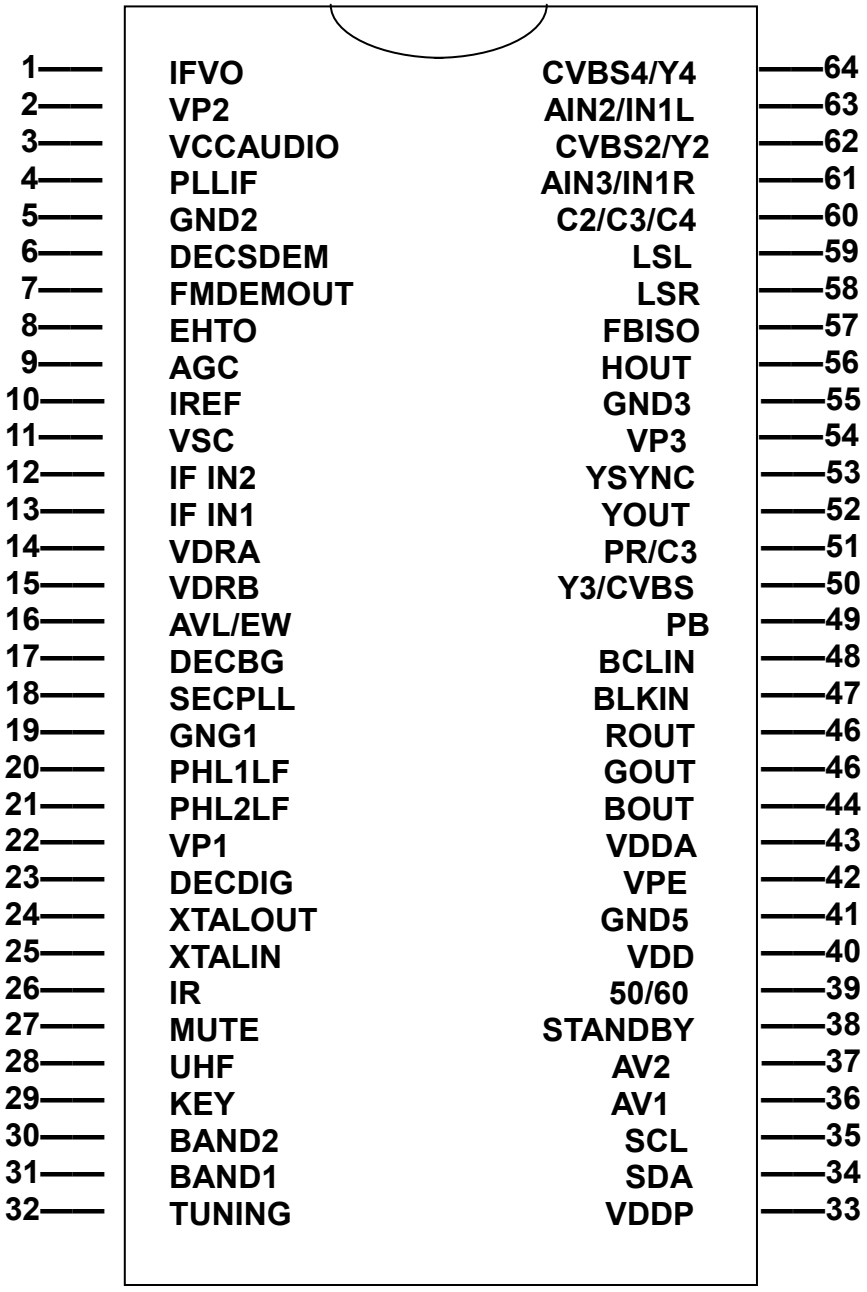


1. POWER
2. MUTE
3. NUMERIC
4. +100
5. Q.V
6. P.MODE
7. TV/AV
8. MENU
9. CHANNEL UP/DOWN
   VOLUME UP/DOWN
   (NAVIGATION KEY)
10. SLEEP
11. CALL
12. V-CHIP
13. GAME
14. CCD

5. Using Device and Description

5-1 MAIN IC(TV PROCESSOR/U-COM/TDA11105PS)

● PIN Configuration(UOC TOP)



SYMBOL	PIN	DESCRIPTION
IFVO	1	CVBS output(front-end or selected video)
VP2	2	Supply VSP(IF and sound) --(5V)
VCCAUDIO	3	Supply VSP(only sound output stage)--(8V)
PLLIF	4	IF-PLL time-constant
GND2	5	Ground VSP(IF and sound)
DECSDEM	6	Demodulator decoupling capacitor
FMDEMOUT	7	AVL capacitor, second sound IF output or demodulated sound output
EHTO	8	EHT feedback input
AGC	9	Tuner AGC control output
IREF	10	Current reference component
VSC	11	Vertical sawtooth capacitor
IF IN2	12	Video SAW filter input 2
IF IN1	13	Video SAW filter input 2
VDRA	14	Vertical drive output A
VDRB	15	Vertical drive output B
AVL/EW	16	Capacitor for automatic volume leveling or E/W drive output
DECBG	17	Bandgap decoupling
SECPLL	18	SECAM-PLL oscillator
GND1	19	Ground VSP(Chroma processing and sync and geometry)
PH1LF	20	Acquisition PLL first phase loop
PH2LF	21	Second phase loop components
VP1	22	Supply VSP (5V)
DECDIG	23	Digital decoupling.
XTALOUT	24	24.576MHZ crystal output
XTALIN	25	24.576MHZ crystal input
IR	26	IR receiver
MUTE	27	MUTE output
S-INDENT/UFH	28	S-VIDEO indent
KEY	29	Key input
BAND2	30	BAND 2
BAND1	31	BAND 1
TUNING	32	14 BIT PWM VT output

VDDP	33	Supply TCG periphery(3.3V)
SDA	34	SDA output
SCL	35	SCL output
AV1	36	AV1 control
AV2	37	AV2 control
STANDBY	38	Standby output
50/60HZ	39	50/60HZ control
VDDC	40	Supply TCG core (3.3V)
GND5	41	Ground TCG and digital ground VSP
VPE	42	OTP programming voltage
VDDA	43	Analog supply TCG digital supply VSP (3.3V)
BOUT	44	Blue output
GOUT	45	green output
ROUT	46	Red output
BLKIN	47	Feedback input continuous cathode calibration loop and vertical guard input
BCLIN	48	Average beam current limiter input
PB	49	Pb input
Y3/CVBS3	50	Y CVBS or Y(C)input
PR/C3	51	Cr input
YOUT	52	Y output
YSYNC	53	Input sync separator
VP3	54	Supply VSP (5V)
GND3	55	Ground VSP
HOUT	56	Horizontal deflection line drive output
FBISO	57	Flyback in and sandcastle out
LSR	58	Audio output (loudspeaker right)
LSL	59	Audio output (loudspeaker left)
C2/C3/C4/AIN5R	60	Chroma or audio input
AIN3/IN1R	61	Audio1 input
CVBS2/Y2	62	CVBS2 input
AIN2/1INL	63	AUDIO2 input
CVBS/Y4/AIN5L	64	CVBS1 input

FAIRCHILD SEMICONDUCTOR®

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FSCQ-Series

FSCQ0565RT / FSCQ0765RT / FSCQ0965RT / FSCQ1265RT FSCQ1465RT / FSCQ1565RT / FSCQ1565RP Green Mode Fairchild Power Switch (FPS™)

Features

- Optimized for Quasi-Resonant Converter (QRC)
- Advanced Burst-Mode Operation for under 1W Standby Power Consumption
- Pulse-by-Pulse Current Limit
- Over Load Protection (OLP) - Auto Restart
- Over Voltage Protection (OVP) - Auto Restart
- Abnormal Over Current Protection (AOCP) - Latch
- Internal Thermal Shutdown (TSD) - Latch
- Under Voltage Lock Out (UVLO) with Hysteresis
- Low Startup Current (typical : 25uA)
- Internal High Voltage SenseFET
- Built-in Soft Start (20ms)
- Extended Quasi-Resonant Switching

Applications

- CTV
- Audio Amplifier

Related Application Notes

- AN4146 - Design Guidelines for Quasi-Resonant Converters Using FSCQ-Series Fairchild Power Switch.
- AN4140 - Transformer Design Consideration for Off-Line Flyback Converters Using Fairchild Power Switch.

Description

In general, a Quasi-Resonant Converter (QRC) shows lower EMI and higher power conversion efficiency compared to conventional hard-switched converter with a fixed switching frequency. Therefore, a QRC is well suited for noise-sensitive applications, such as color TV and audio. Each product in the FSCQ-Series contains an integrated Pulse Width Modulation (PWM) controller and a SenseFET, and is specifically designed for quasi-resonant off-line Switch Mode Power Supplies (SMPS) with minimal external components. The PWM controller includes an integrated fixed frequency oscillator, under voltage lockout, leading edge blanking (LEB), optimized gate driver, internal soft start, temperature-compensated precise current sources for a loop compensation, and self protection circuitry. Compared with a discrete MOSFET and PWM controller solution, the FSCQ-Series can reduce total cost, component count, size, and weight, while simultaneously increasing efficiency, productivity, and system reliability. These devices provide a basic platform that is well suited for cost-effective designs of quasi-resonant switching flyback converters.

OUTPUT POWER TABLE(3)		
PRODUCT	230VAC ±15%(2)	85-265VAC
	Open Frame(1)	Open Frame(1)
FSCQ0565RT	70W	60 W
FSCQ0765RT	100 W	85 W
FSCQ0965RT	130 W	110 W
FSCQ1265RT	170 W	140 W
FSCQ1465RT	190 W	160 W
FSCQ1565RT	210 W	170 W
FSCQ1565RP	250 W	210 W

Table 1. Maximum Output Power

Notes:

1. Maximum practical continuous power in an open frame design at 50°C ambient.
2. 230 VAC or 100/115 VAC with doubler.
3. The junction temperature can limit the maximum output power.

Typical Circuit

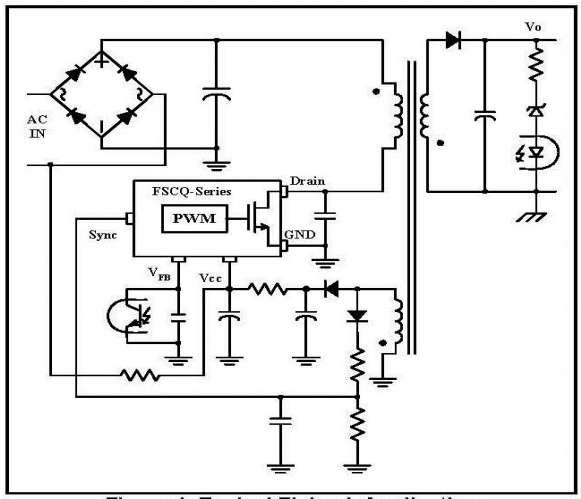

Figure 1. Typical Flyback Application

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Internal Block Diagram

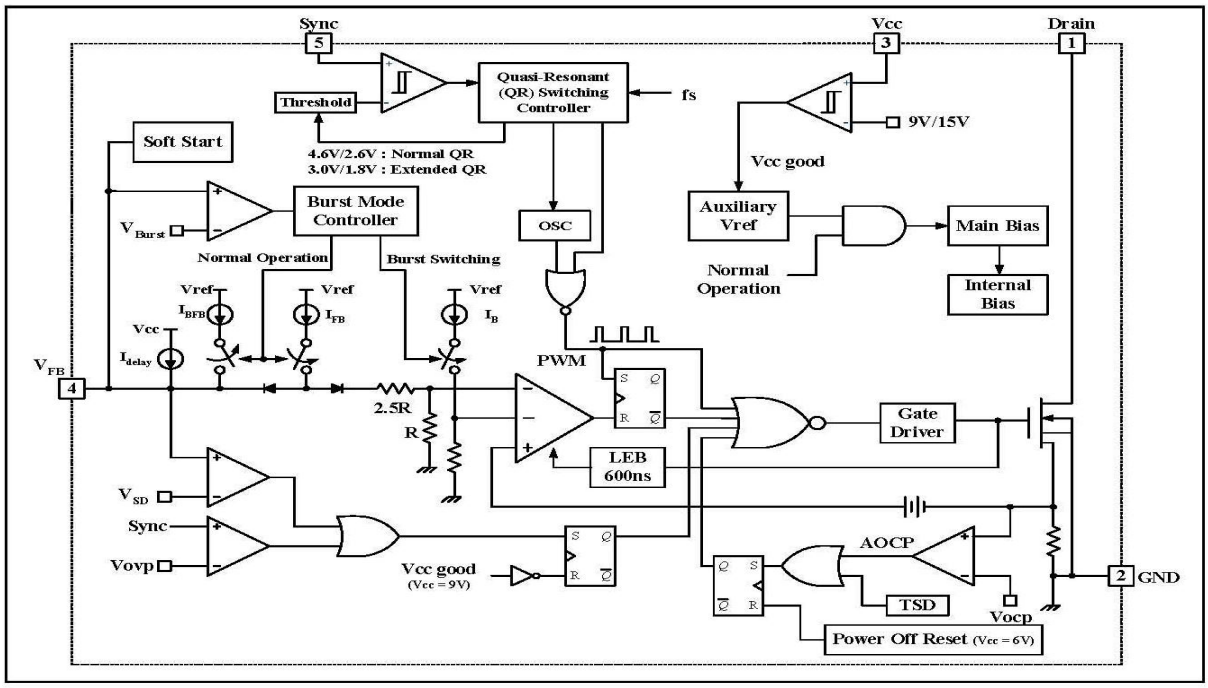


Figure 2. Functional Block Diagram of FSCQ-Series

Pin Definitions

Pin Number	Pin Name	Pin Function Description
1	Drain	High voltage power SenseFET drain connection.
2	GND	This pin is the control ground and the SenseFET source.
3	Vcc	This pin is the positive supply input. This pin provides internal operating current for both start-up and steady-state operation.
4	Vfb	This pin is internally connected to the inverting input of the PWM comparator. The collector of an opto-coupler is typically tied to this pin. For stable operation, a capacitor should be placed between this pin and GND. If the voltage of this pin reaches 7.5V, the over load protection triggers, which results in the FPS shutting down.
5	Sync	This pin is internally connected to the sync detect comparator for quasi-resonant switching. In normal quasi-resonant operation, the threshold of the sync comparator is 4.6V/2.6V. Whereas, the sync threshold is changed to 3.0V/1.8V in an extended quasi-resonant operation.

5-3 Horizontal Output TR (2SC5296)

无锡明祥电子有限公司

MUXI MINGXIANG ELECTRONICS CO.,LTD

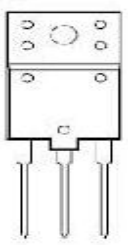
2SC5296

主要参数 MAIN CHARACTERISTICS

BV_{CBO}	1500 V
I_C	8 A
$V_{CE(sat)}$	3 V(max)
t_f	1 μs(max)

封装 Package

TO-3P(H)IS



1 2 3

用途

● 彩色电视机行输出电路

APPLICATIONS

● Horizontal deflection output for color TV.

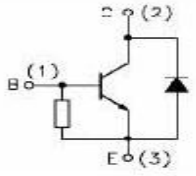
产品特性

●2SC5296 是 **NPN** 双极型高反压大功率晶体管，制造中采用的主要工艺技术有：高压台面工艺技术、三重扩散技术等，采用塑料全包封结构。环保（RoHS）产品。

FEATURES

● 2SC5296 is high breakdown voltage of **NPN** bipolar transistor. The main process of manufacture: high voltage mesa type process, triple diffused process etc., adoption of fully plastic packge. RoHS product.

等效电路 EQUIVALENT CIRCUIT



R_{BE}=50Ω(Typ.)

绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

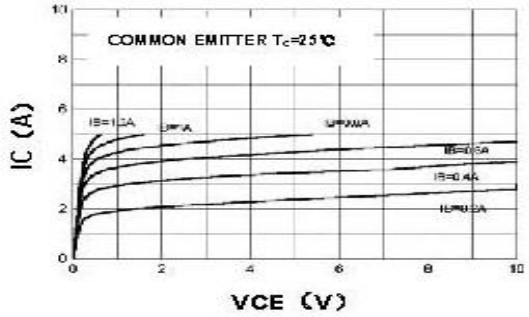
项目 Parameter		符号 Symbol	数值 Value	单位 Unit
集电极—基极直流电压 Collector–Base Voltage		BV_{CBO}	1500	V
集电极—发射极直流电压 Collector–Emitter Voltage		BV_{CEO}	600	V
发射极—基极直流电压 Emitter–Base Voltage		BV_{EBO}	6	V
最大集电极电流 Collector Current	直流 DC	I_C	8	A
	脉冲 Pulse	I_{CP}	16	
最大基极直流电流 Base Current		I_B	4	A
最大集电极耗散功率 Collector Power Dissipation		P_C	50	W
最高结温 Max. Junction Temperature		Tj	150	℃
储存温度 Storage Temperature Range		T_{STG}	-55~+150	℃

电特性 ELECTRICAL CHARACTERISTICS (Tc=25℃)

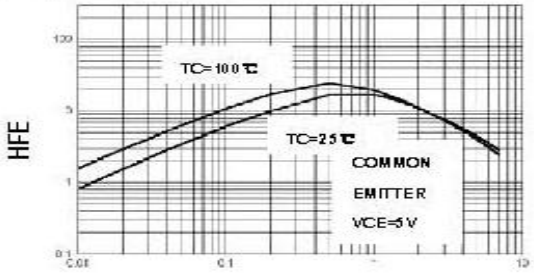
项　　目 Parameter	测试条件 Tests conditions	最小值 Min	最大值 Max	单位 Unit
$V(BR)_{CBO}$	I_C=1mA,I_E=0	1500		V
$V(BR)_{EBO}$	I_E=400mA,I_C=0	6		V
I_{CBO}	V_{CB}=1500V, I_E=0		1	mA
I_{EBO}	V_{EB}=4V, I_C=0	40	150	mA
H_{FE}	V_{CE} = 5 V, I_C = 1 A	10	30	
	V_{CE} = 5 V, I_C = 4 A	5		
$V_{CE(sat)}$	I_C=4.5A, I_B=0.9A		3	V
$V_{BE(sat)}$	I_C=4.5A, I_B=0.9A		1.5	V
$-V_F$	I_F=5A		2	V
tf	I_C=4A,2I_{B1}=-I_{B2}=1.6A		1	μs
ts	f_H=15.75kHz		9	μs
ft	V_{CE}=10V, I_C=0.1A	1		MHz

特征曲线　ELECTRICAL CHARACTERISTICS CURVES

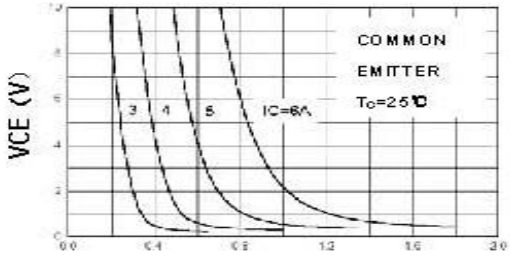
IC – VCE



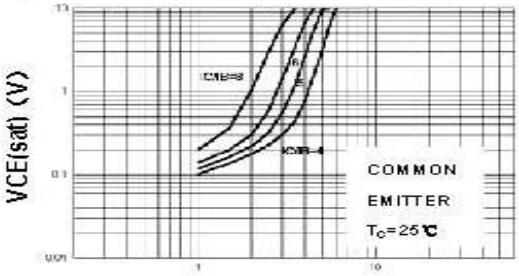
HFE – IC



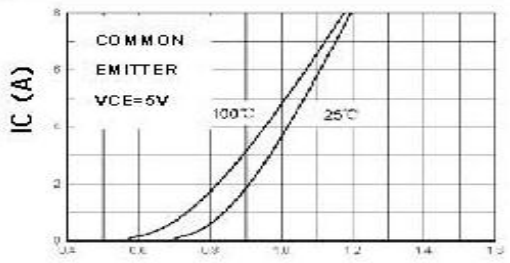
VCE - IB



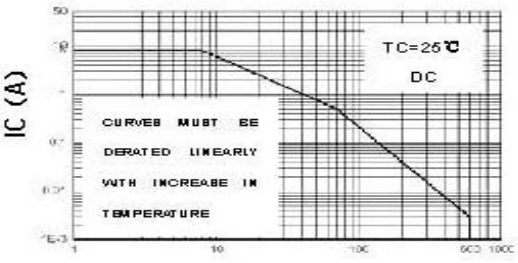
VCE（sat）- IC



IC - VBE

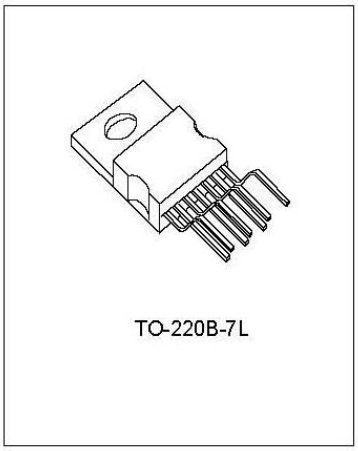


SOA



UTC78041 LINEAR INTEGRATED CIRCUIT

VERTICAL DEFLECTION IC



DESCRIPTION

The UTC78041 is a monolithic integrated circuit designed for use in the vertical deflection circuit of monitor and small color television receivers.

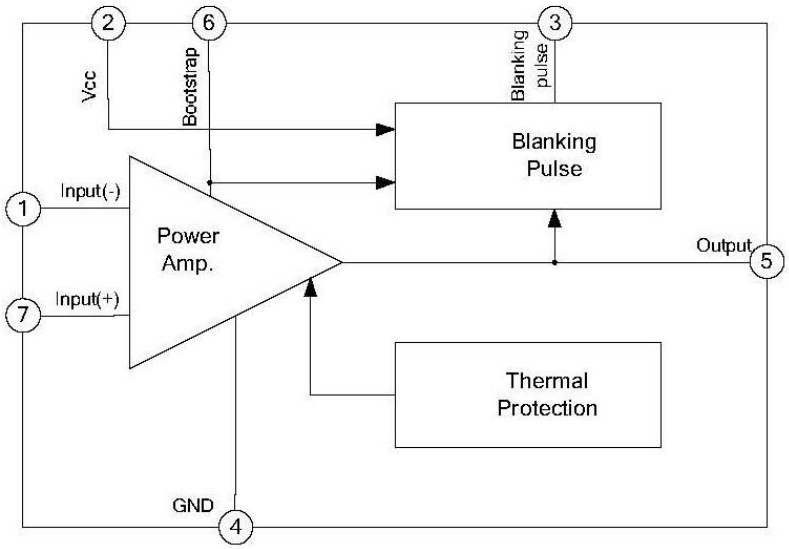
FEATURE

* Built-in power amp.
* Built-in blanking generator
* Built-in thermal protection
* Large output current:2.2Ap-p
* High maximum voltage
* DC coupling application

ORDERING INFORMATION

DEVICE	PACKAGE
UTC78041	TO-220B-7L

BLOCK DIAGRAM



PIN CONFIGURATION

Pin no.	Pin name
1	Input(-)
2	Vcc2
3	Blanking pulse
4	GND
5	Output
6	Bootstrap
7	Input(+)

ABSOLUTE MAXIMUM RATINGS(Ta=25°C)

Characteristics	Symbol	Value	Unit
Supply Voltage (2pin to 4pin)	Vcc2	34	V
Output Supply Voltage (5pin to 4pin)	Vcc6	70	V
Maximum Peak Output Current	I5 max	-1.5~1.5	A
Thermal Resistance	R_{θ}	4.0	°C/W
Maximum Power Dissipation (with a specific big heatsink)	Pd max	9	W
Operating Temperature	Topr	-20~+85	°C
Storage Temperature	Tstg	-40~150	°C
Thernal shutdown Junction Temperature	Tsd	150	°C

ELECTRICAL CHARACTERISTICS (Vcc=24V,Ta=25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Operating Voltage Range	Vcc		16	24	33	V
Quiescent Operating Voltage	Id		35	-	65	mA
Maximum Deflection Current	I5p-p		-	-	2.2	Ap-p
Saturation Voltage (output to ground)	Vs5-4	I5=1.1A	-	-	1.5	V
Saturation Voltage (output to supply voltage)	Vs5-6	I5=-1.1A	-	-	3.5	V
Pin 3 Saturation Voltage	Vs3-4	I3=20mA	-	-	1.8	V
Pin 3 Saturation Voltage (blanking the second part)	Vs3-2	I3=-1.1A	-	-	3.2	V
Output Midpoint Voltage	Vmid		11	12	13	V

5-5 Sound AMP IC (UTC7266)

UTC7266 LINEAR INTEGRATED CIRCUIT

7+7W DUAL BRIDGE AMPLIFIER

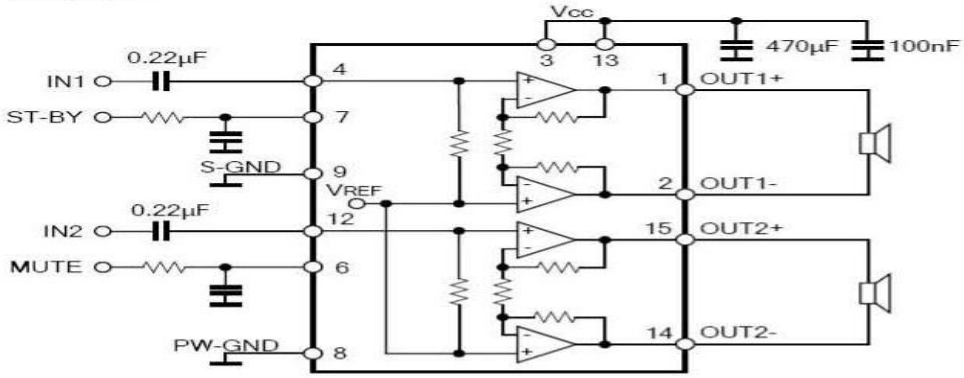
DESCRIPTION

The UTC7266 is a 7+7W dual bridge amplifier specially designed for TV and Portable Radio applications.

FEATURES

* Wide supply voltage range (3~18V)
* Minimum external components
  - No SVR capacitor
  - No bootstrap
  - No boucherot cells
* STAND-BY & MUTE functions
* Short circuit protection
* Thermal overload protection

BLOCK DIAGRAM



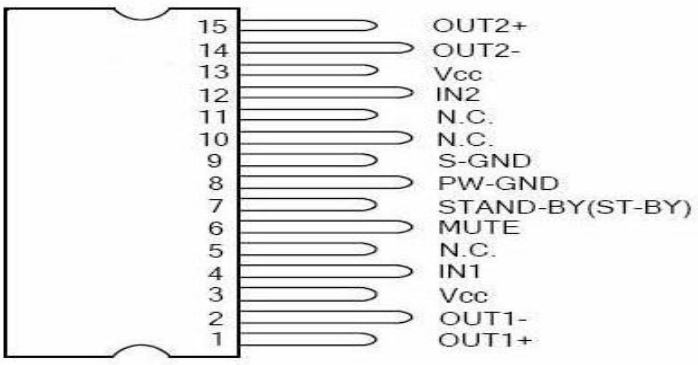
ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{cc}	20	V
Output Peak Current (internally limited)	I_o	2	A
Power Dissipation (T_{case} =70°C)	P_{tot}	33	W
Operating Temperature	T_{op}	0 ~ +70	°C
Storage Temperature	T_{stg}	-40 ~ +150	°C

THERMAL DATA

PARAMETER	SYMBOL	RATINGS		UNIT
Thermal Resistance Junction to Case	$R_{th\ j\text{-}case}$	Typ. 1.4	Max. 2	°C/W

PIN CONFIGURATION



ELECTRICAL CHARACTERISTICS (V_{cc}=11V, RL =8Ω, f=1kHz, Ta=25℃, unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Supply Range	V_{cc}		3	11	18	V
Total Quiescent Current	Iq			50	65	mA
Output Offset Voltage	V_{os}				120	mV
Output Power	P_o	THD = 10%	6.3	7		W
Total Harmonic Distortion	THD	P_o = 1W		0.05	0.2	%
		P_o = 0.1W to 2W f = 100Hz to 15kHz			1	%
Supply Voltage Rejection	SVR	f = 100Hz VR = 0.5V	40	56		dB
Crosstalk	CT		46	60		dB
Mute Attenuation	A_{MUTE}		60	80		dB
Thermal Threshold	T_w			150		° C
Closed Loop Voltage Gain	G_v		25	26	27	dB
Voltage Gain Matching	△Gv				0.5	dB
Input Resistance	R_i		25	30		KΩ
Mute Threshold	VT_{MUTE}	for VCC > 6.4V; VO = -30dB for VCC < 6.4V; VO = -30dB	2.3 VCC/2-1	2.9 VCC/2-0.75	4.1 VCC/2-0.5	V V
St-by Threshold	VT_{ST-BY}		0.8	1.3	1.8	V
ST-BY current V6 = GND	I_{ST-BY}				100	μA
Total Output Noise Voltage	eN	A curve f = 20Hz to 20kHz		150		μV

APPLICATION SUGGESTION

STAND-BY AND MUTE FUNCTIONS

(A) Microprocessor Application

In order to avoid annoying "Pop-Noise" during Turn-On/Off transients, it is necessary to guarantee the right St-by and mute signals sequence. It is quite simple to obtain this function using a microprocessor (Fig. 1 and 2).

At first St-by signal (from mP) goes high and the voltage across the St-by terminal (Pin 7) starts to increase exponentially. The external RC network is intended to turn-on slowly the biasing circuits of the amplifier, this to avoid "POP" and "CLICK" on the outputs.

When this voltage reaches the St-by threshold level, the amplifier is switched-on and the external capacitors in series to the input terminals (C3, C5) start to charge.

It's necessary to mantain the mute signal low until the capacitors are fully charged, this to avoid that the device goes in play mode causing a loud "Pop Noise" on the speakers.

A delay of 100-200ms between St-by and mute signals is suitable for a proper operation.

Figure 1: Microprocessor Application

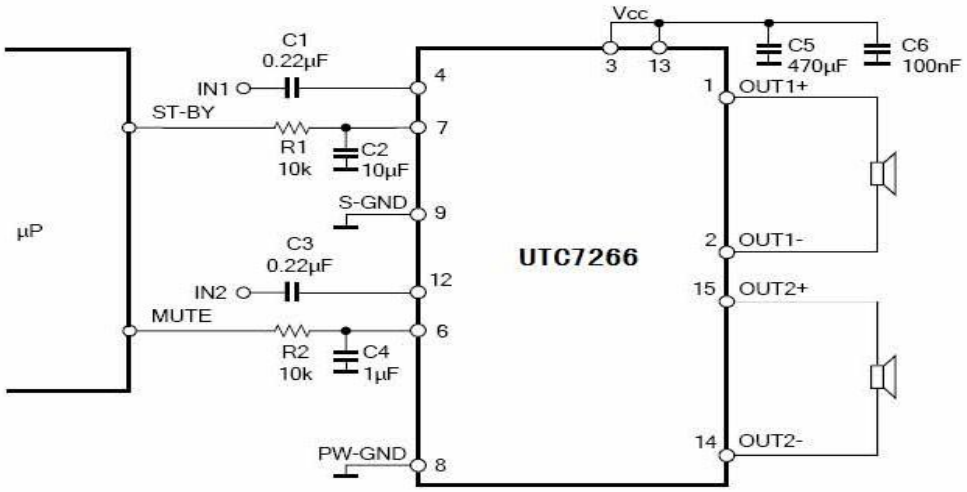


Fig. 1 Microprocessor Application

Figure 2: Microprocessor Driving Signals.

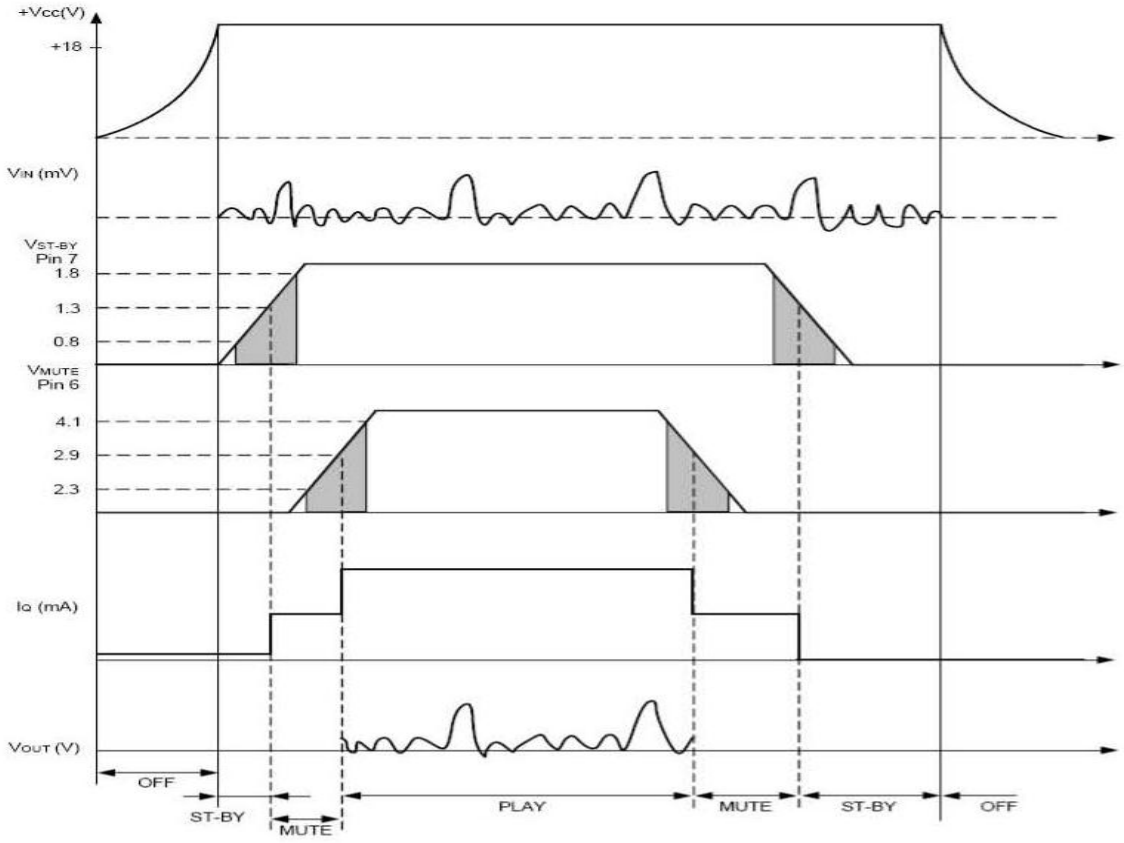


Fig 2 Microprocessor Driving Signals

(B) Low Cost Application
In low cost applications where the mP is not present, the suggested circuit is shown in fig.3.
The St-by and mute terminals are tied together and they are connected to the supply line via an external voltage divider.
The device is switched-on/off from the supply line and the external capacitor C4 is intended to delay the St-by and mute threshold exceeding, avoiding "Popping" problems.

Figure 3a: Stand-alone Low-cost Application.

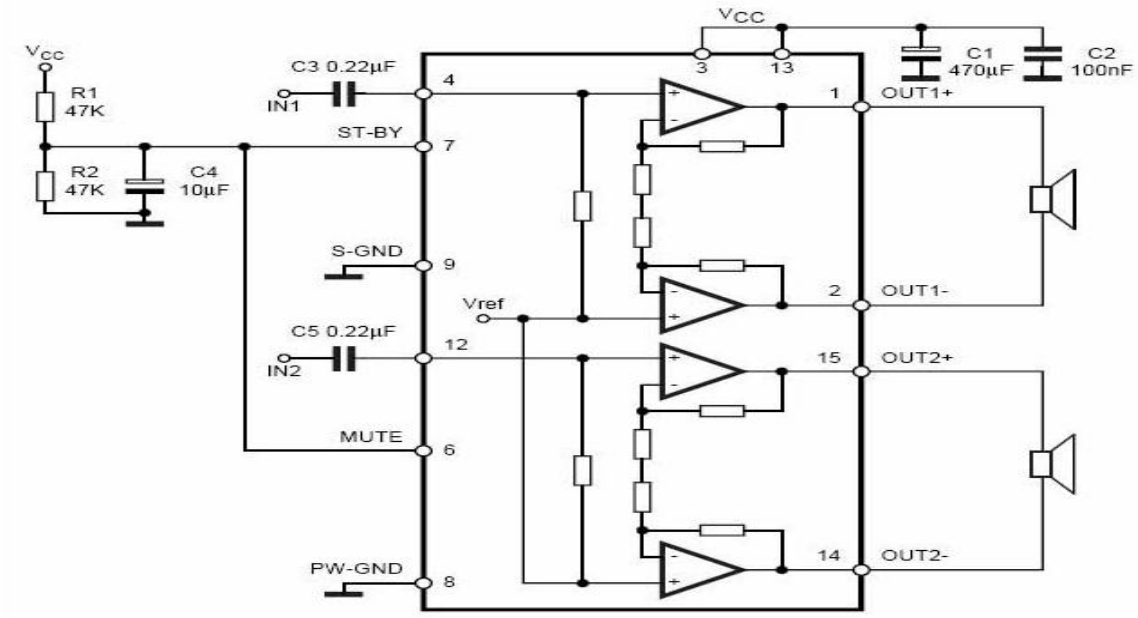


Figure 4: Distortion vs Output Power

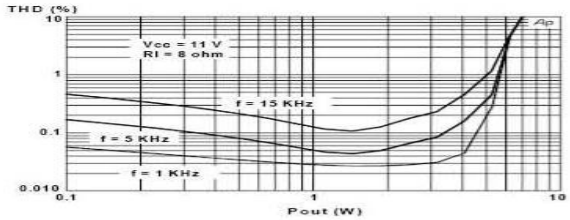


Figure 5: Distortion vs Output Power

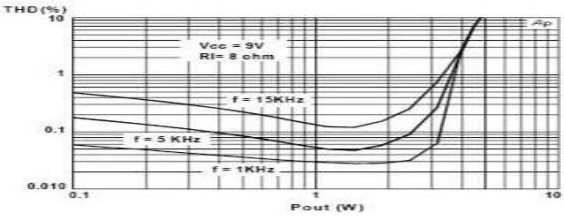


Figure 6: Distortion vs Frequency

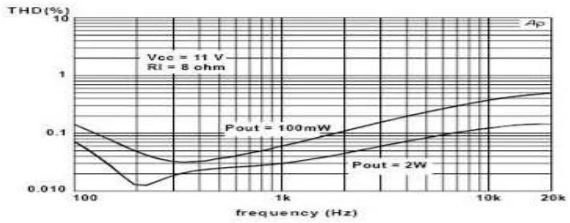


Figure 7: Gain vs Frequency

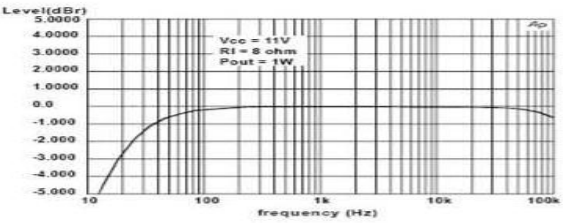


Figure 8: Output Power vs. Supply Voltage

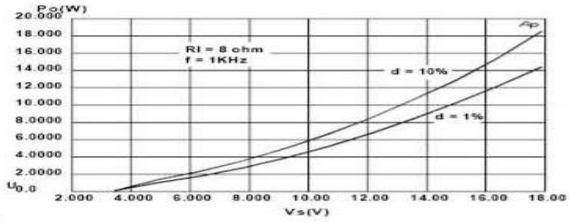


Figure 9: Total Power Dissipation & Efficiency vs. Output Power

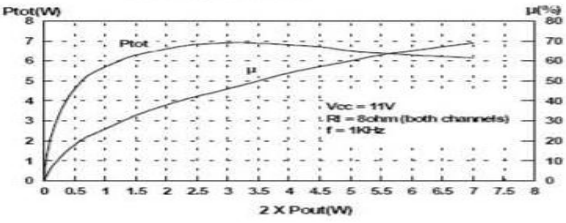


Figure 10: Mute Attenuation vs. V pin.6

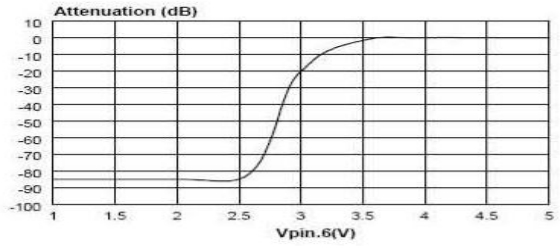


Figure 11: Stand-By Attenuation vs Vpin.7

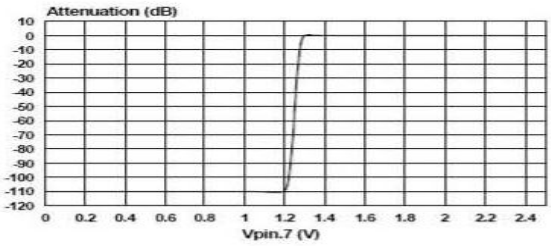
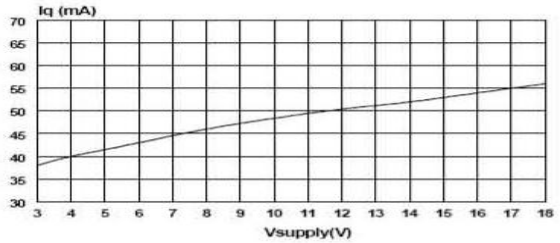
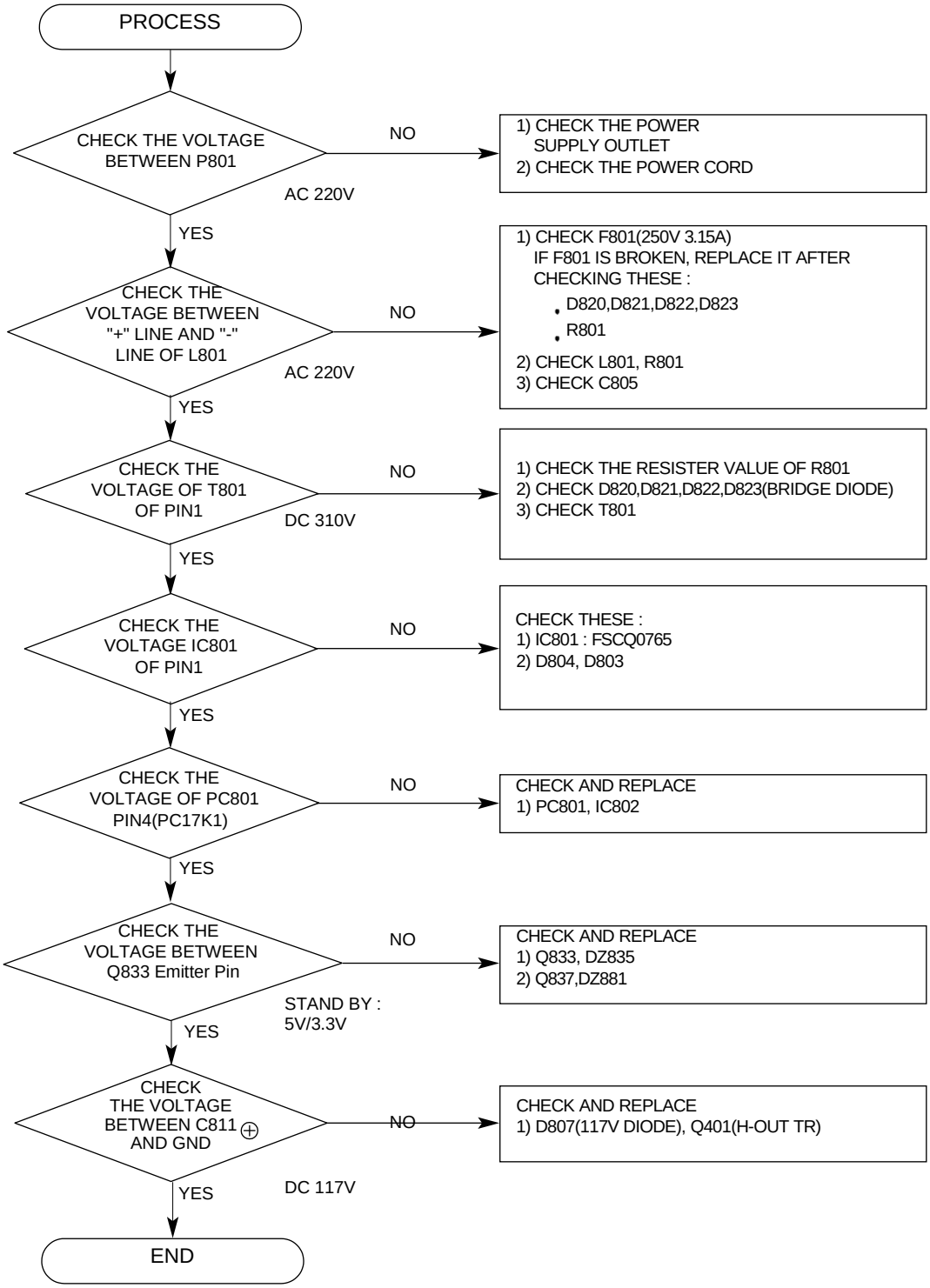


Figure 12: Quiescent Current vs. Supply Voltage

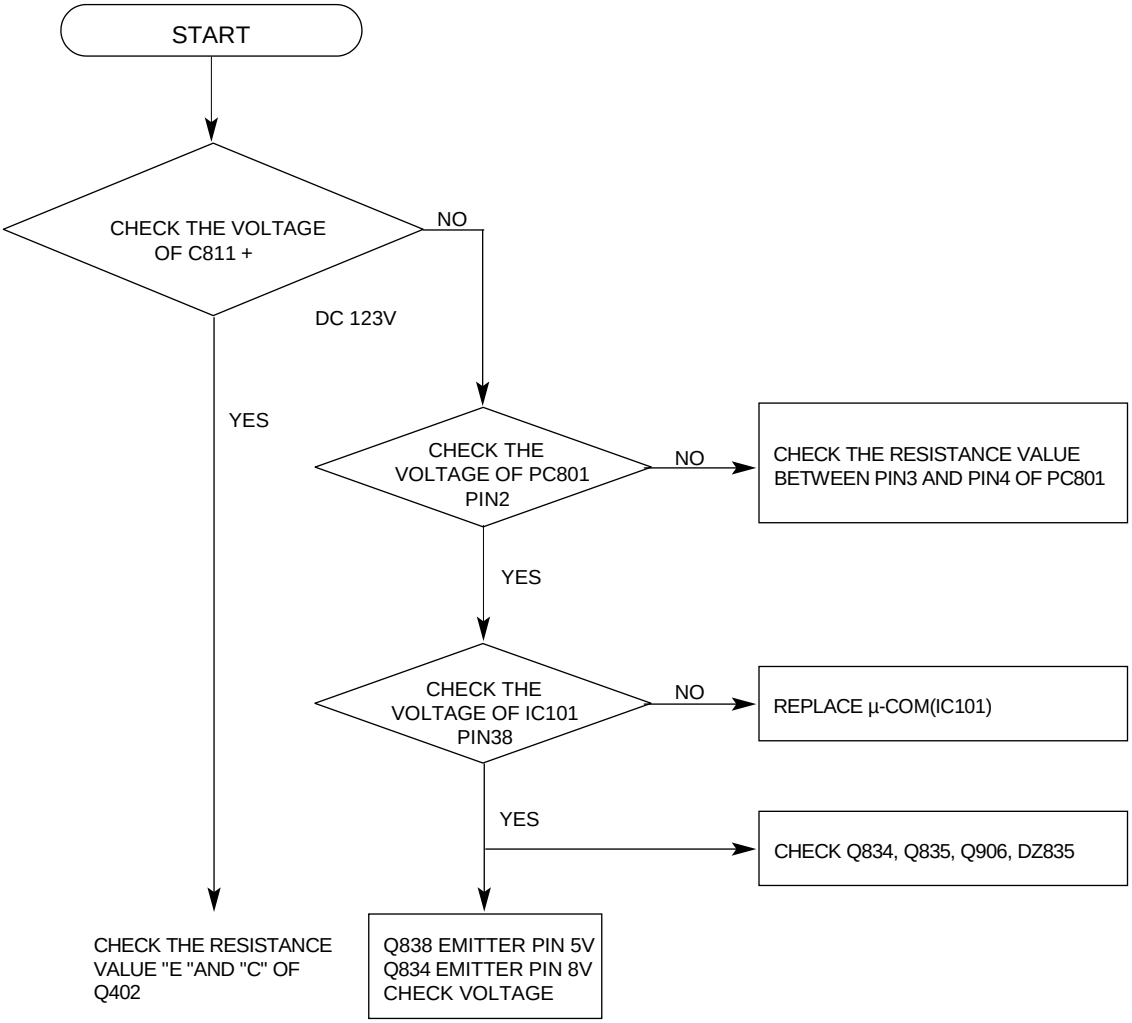


6. Trouble Shooting Flow Chart

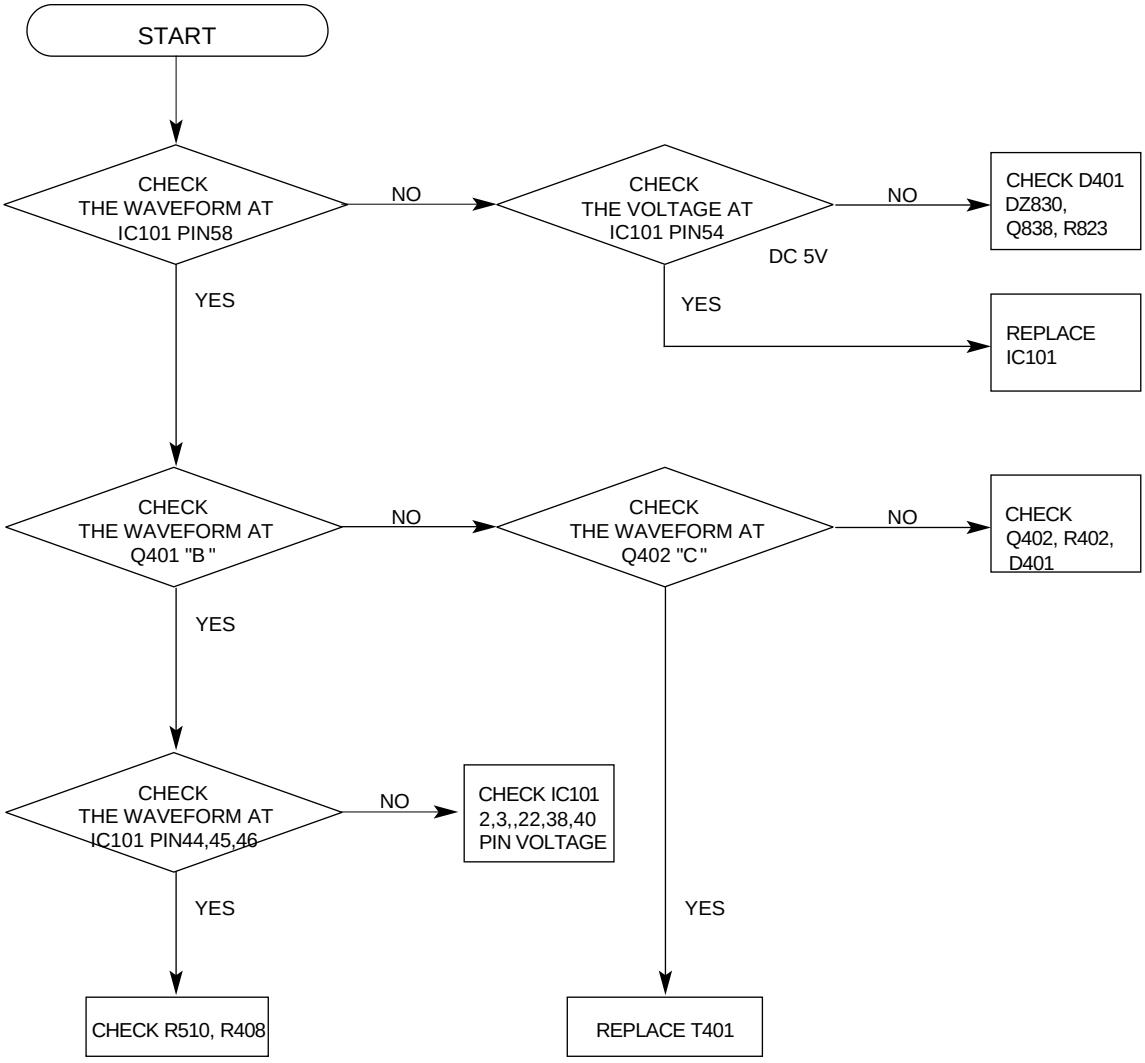
1. No Power



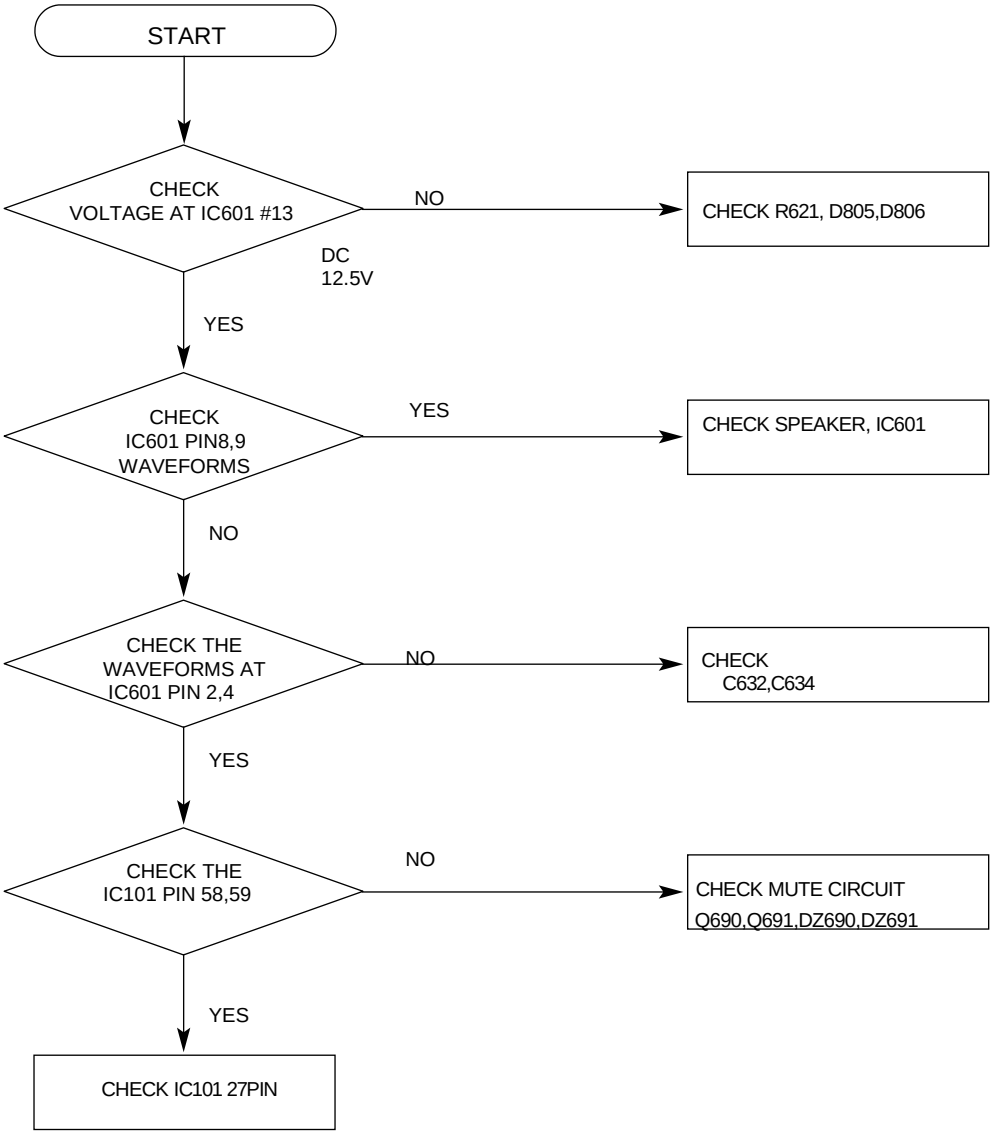
2. In stand-by status (POWER OK), TV is switched on, SMPS turns off and LED turns off (ON/OFF)



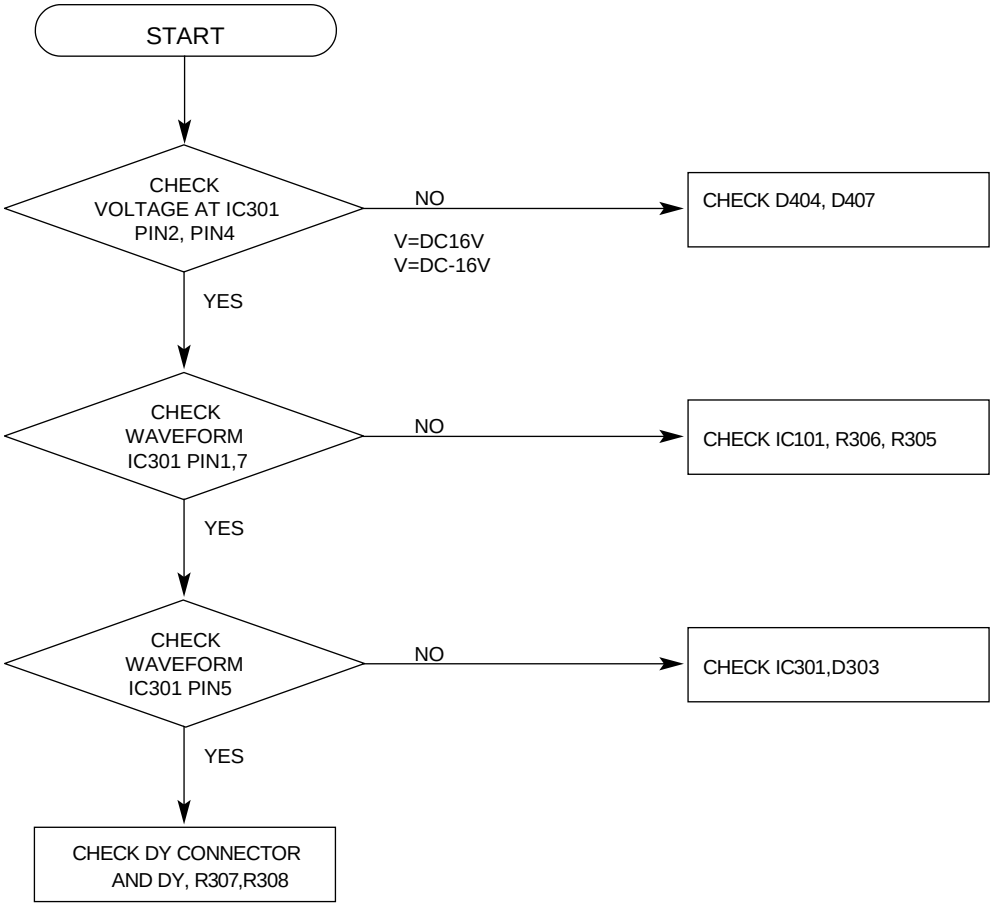
3. No Picture(sound ok)



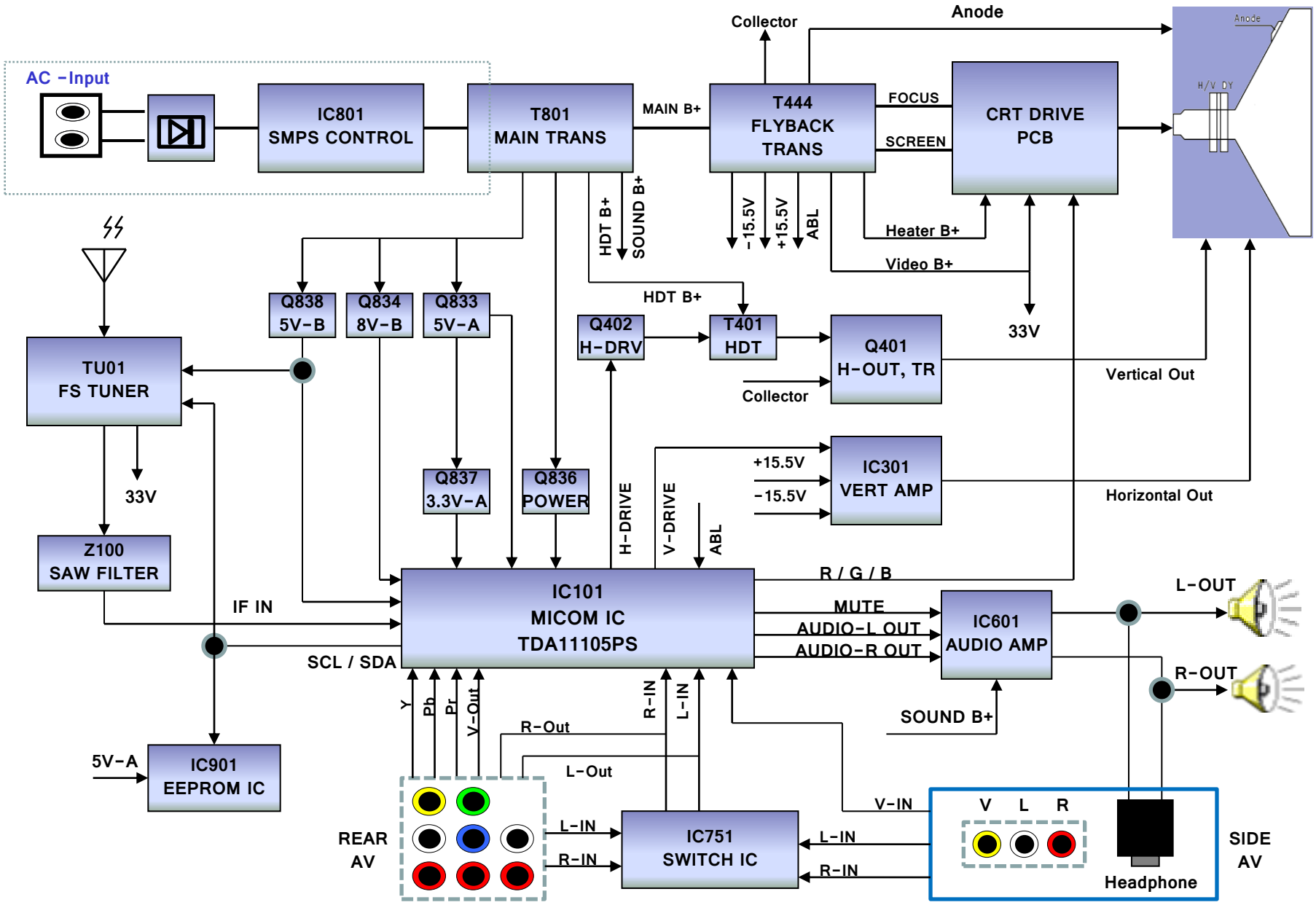
4. No Sound


START
CHECK
VOLTAGE AT IC601 #13
NO
CHECK R621, D805,D806
DC
12.5V
YES
CHECK
IC601 PIN8,9
WAVEFORMS
YES
CHECK SPEAKER, IC601
NO
CHECK THE
WAVEFORMS AT
IC601 PIN 2,4
NO
CHECK
C632,C634
YES
CHECK THE
IC101 PIN 58,59
NO
CHECK MUTE CIRCUIT
Q690,Q691,DZ690,DZ691
YES
CHECK IC101 27PIN

5. Vertical Line(Reference Line)

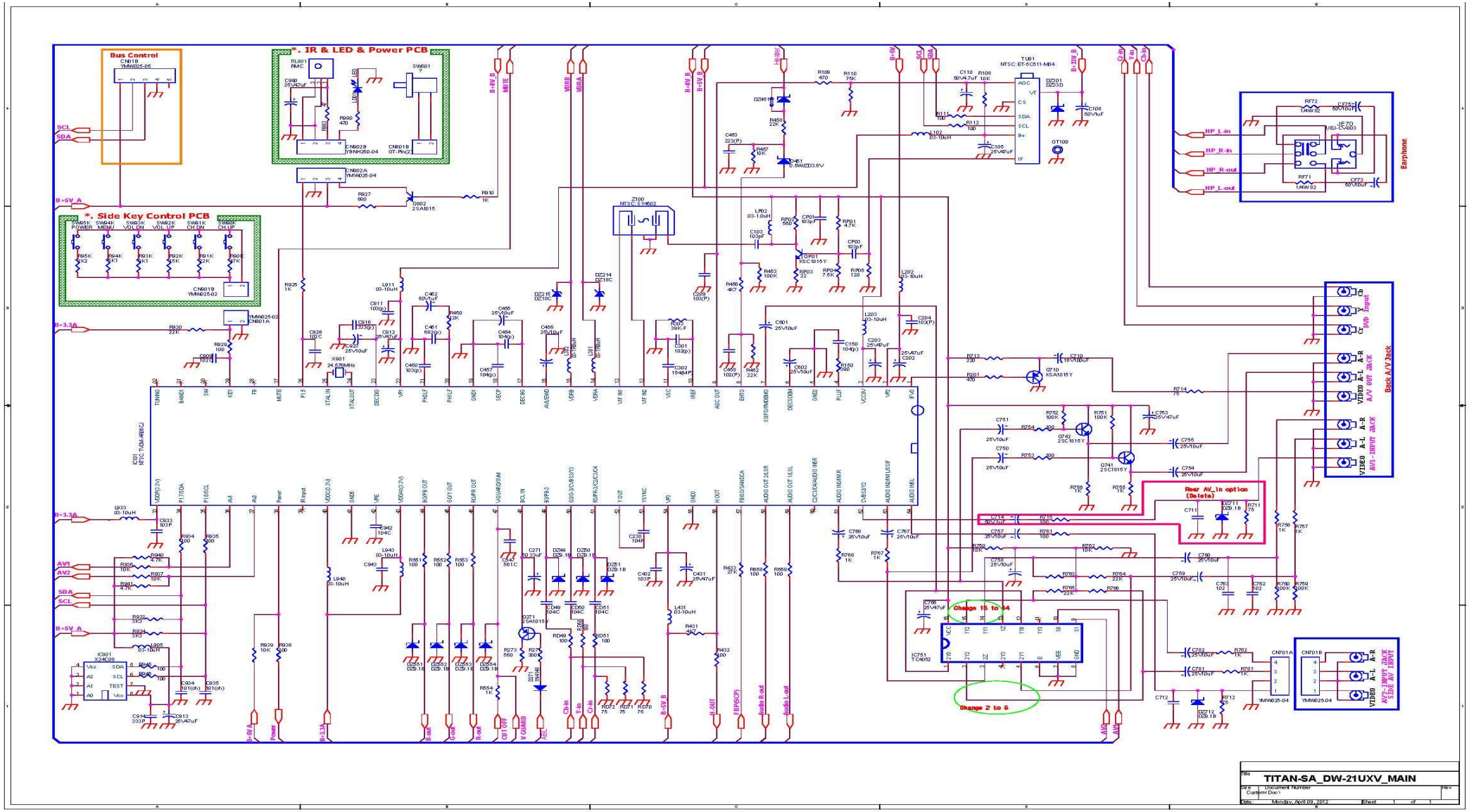


7. NXP 21US Block diagram

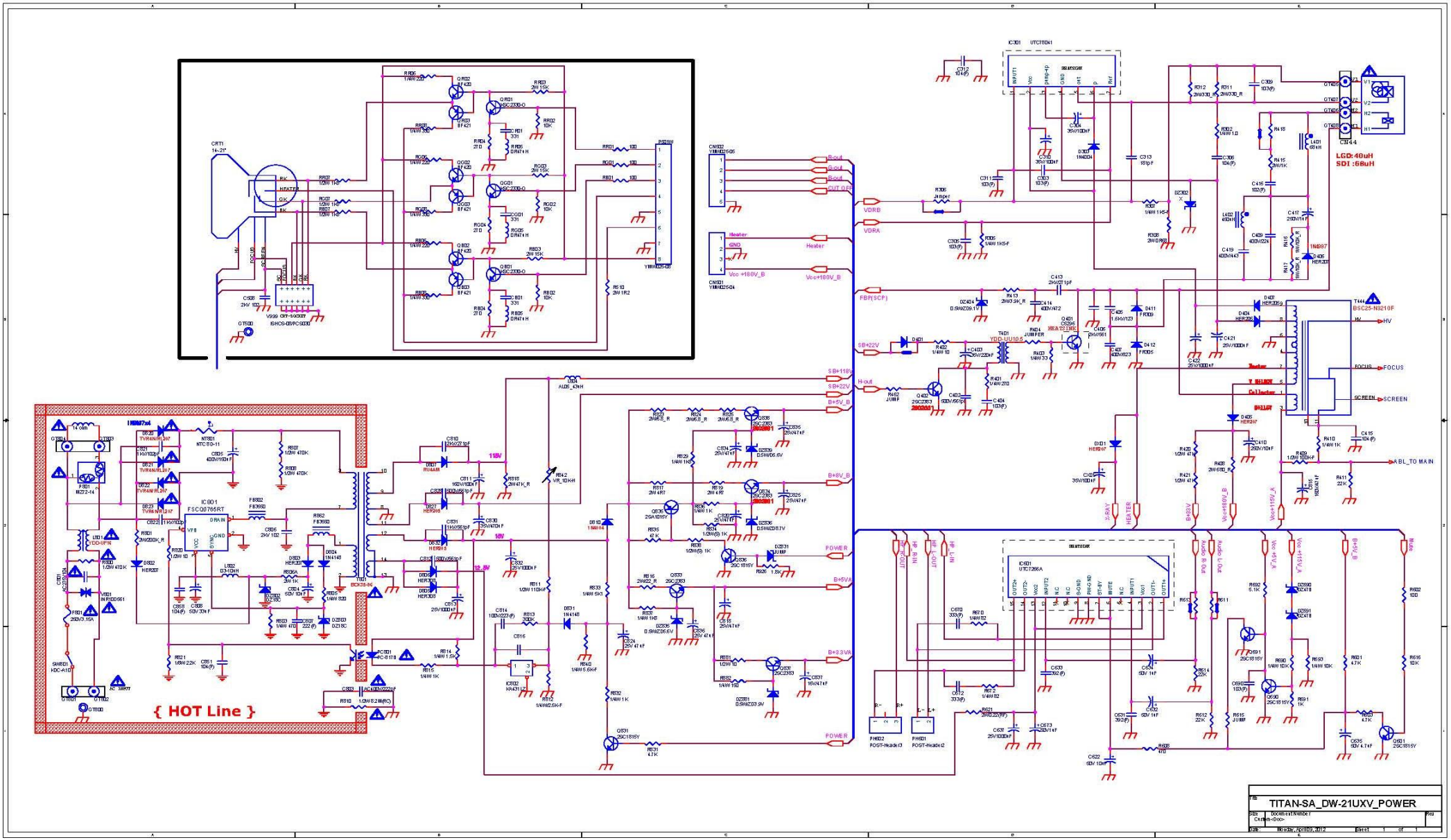


9. SCHEMATIC DIAGRAM

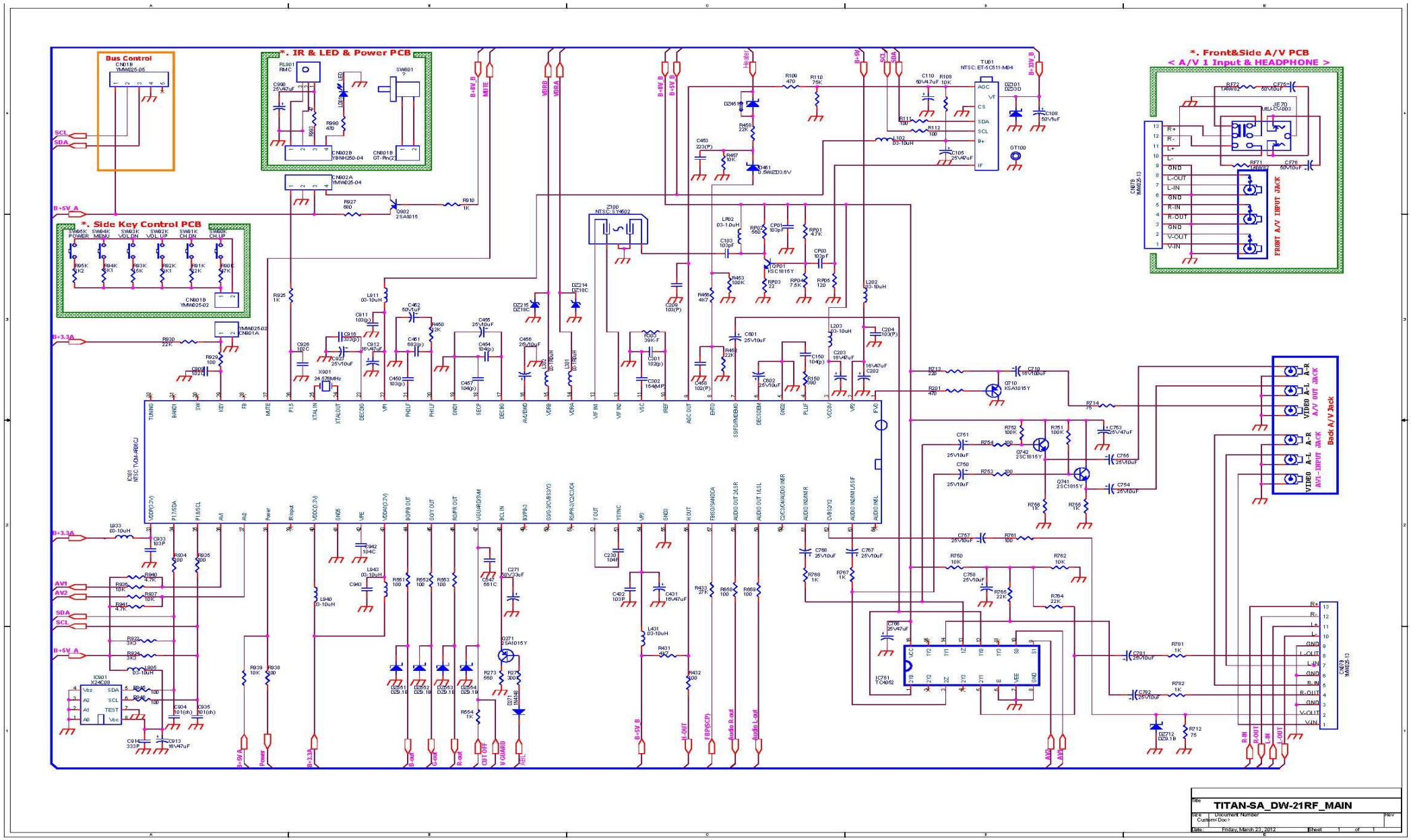
[21US _ MAIN]



[21US _ POWER]



[21RF _ MAIN]


Bus Control
*. IR & LED & Power PCB
*. Side Key Control PCB
*. Front&Side A/V PCB
< A/V 1 Input & HEADPHONE >
FRONT A/V INPUT JACK
Back A/V Jack
TITAN-SA_DW-21RF_MAIN
Friday, March 23, 2012

[21RF _ POWER]